

RESEARCH ARTICLE

Impact of Information Communication Technology in Enhancing the Management of the Natural and Cultural Heritage Resources in Idanre Hills for E-tourism Attraction

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ABSTRACT

Many natural and cultural heritage resources that are supposed to create revenue generation and employment opportunity through tourism are nonchalantly abandoned without any developmental attention given to them. This has really deprived the community and the nation as a whole the economic growth, and recognition they deserve. To mitigate this problem, presented in this paper is the impact of Information and Communications Technology (ICT) in enhancing the management of the natural and cultural heritage resources in Idanre Hills and its environs. A detail assessment of the level of development of the hills' cultural and natural features was carried out based on the four components of tourism, namely: (1) Attraction, (2) accessibility, (3) accommodation, and (4) amenities. A conceptual e-tourism designed for the hills has the basic component of e-commerce. The stratified random sampling technique was used to collect the primary data, with the assistance of a semi-structured questionnaire. A 4-point Likert-type scale was employed in the questionnaire to illustrate the impacts of ICT in tourism. Analysis of variance perception of respondents about the impact of ICT on tourism business showed generalized additive model Group Arithmetic Mean (GAM) of 167.4; this simply means that the arithmetic means of respondents that accepted the application of ICT were more than the arithmetic means of respondents that rejected the application.

Key words: Analysis of variance, cultural resources, heritage resources, Idanre hills, information communication technology, natural resources

INTRODUCTION

The Information and Communications Technology (ICT) plays a major role in tourism, travel, and hospitality industry. The integration of ICT in the tourism industry is essential for the success of tourism enterprise. ICT facilitates an individual to access tourism products information from anywhere anytime. In Oladeji *et al.*, e-commerce in the tourism industry has emerged as a frontier area for information technology. E-commerce as defined in Turban and Linda, 2010; Bocij *et al.*, 2008, are the process of buying and selling or exchanging products, services, and information through

computer networks including the internet. Tourism and e-commerce consist primarily of the distributing, buying, selling, marketing, and servicing of products or services over electronic systems such as the internet and other computer networks.^[1-5]

It can sometimes involve electronic funds transfer, supply chain management, e-marketing, online marketing, online transaction processing, electronic data interchange, automated inventory management systems, and automated data collection systems. It typically uses electronic communication technology such as the internet, extranet, e-mail, e-books, database, and mobile phones. The emergence of the internet as a tool for the business-to-consumer aspect of e-commerce has far-reaching ramifications. Most importantly, it has created opportunities for businesses to reach

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out to consumers in a very direct way and create electronic markets.^[6-10]

In general, as presented in Shanker, 2008, the revolution in ICT has profound implications for economic and social development. It has pervaded every aspect of human life whether it is health, education, economics, governance, entertainment, etc. Dissemination, propagation, and accessibility of these technologies are viewed to be integral to a country's development strategy. The most important benefits associated with the access to the new technologies are: (1) It increases the supply of information; (2) it reduces the cost of production; (3) it has overcome the constraints of distance and geography; and (4) it has led to more transparency. Idanre hills, like any other hills in the world, are tourism area with abundant natural resources of immeasurable socioeconomic, cultural, and ecological values.

Oladeji *et al.* opined that most tourism areas in Nigeria are endowed with natural and cultural resources that if developed could support other tourism activities such as the development of cultural tourism, heritage tourism, cultural heritage tourism, creative tourism, agrotourism, aquatourism, and other ecological tourism activities such as game viewing, bird watching, adventure/wilderness experience, and sport fishing tourism (Ormsby and Mannle, 2006). However, these values may be elusive if handled or treated indiscriminately with impunity and nonchalant attitude. Many research scholars had carried out studies on Idanre hills since its inclusion among World Heritage Sites in 2008.^[11-15]

Their findings had provided useful information on the ecological resources of the hills. Passage of time, therefore, has made it necessary for the appraisal, review, modification, and update of some of the management tools and data generated in line with the current global practices in natural resources management and ecotourism development. For the ecotourism potentials of the hills to be maximized, there is need for the emergence of appropriate, reliable, detailed and accurate up to date data on the anthropological, anthropogenic, natural, and historical cultural heritage resources using the ICT. Therefore, there is the need to develop a framework on the impact of ICT in enhancing the management of the natural and cultural heritage resources of Idanre hills for e-tourism attraction.^[16-20]

Tichaawa *et al.*, 2017, opined that despite the advances and growth in technology that have

occurred on a global scale, and the arguments made in relation to its significance, Ashari, Heidari, and Parvaresh, 2014, contend that few studies, as yet, have researched the impacts of ICT on tourism businesses. Consequently, the current study recognizes the pressing need to close the present research gap. Consequently, the current study uniqueness is grounded in the fact that it investigates the impact of ICT in enhancing the management of the natural and cultural heritage resources of Idanre hills and its environs for e-tourism attraction businesses from a developing country perspective. In this context, studying the impact of ICT in enhancing the management of the natural and cultural heritage resources of Idanre hills and its environs for e-tourism attraction businesses is relevant, as it might provide useful insights into its implications for the future.^[21-30]

In this paper, we set the following as the objectives: (1) To review the relationship between ICT, e-commerce, and e-tourism; (2) to carry out detail assessment of the level of development of the hills' cultural and natural features based on the four components of tourism; and (3) to analyze the impact of ICT in enhancing the management of the natural and cultural heritage resources of Idanre hills for e-tourism attraction. The rest of the paper is organized as follows: In Section 2, we present the case study area, in Section 3, we present the related works, in Section 4, we present the materials and method used in achieving the objectives, the results are presented and discussed in Section 5, and Section 6 concludes the paper.^[31-35]

CASE STUDY

Idanre, Nigeria [Figures 1 and 2], is one of the two cultural landscapes listed in 2008 World Heritage Sites. The process of successful enlistment and maintenance of this site have benefitted from immense contributions of civil societies. Idanre hills cultural landscape was the highest hill-top settlement in Southwest Nigeria [Figure 3] to have an elaborate settlement structure at the apex of which was a palace that symbolized and epitomized the political architecture of Pre-Colonial Yoruba land. Idanre heritage site is blessed with unique natural, archeological, cultural, and historical resources consisting hills of high plain with spectacular valleys interspersed with inselbergs of about 3000 feet above sea level that is of ecological, environmental, commercial,

vegetation as well as the fauna and flora life have remained undistributed. However, the festivals provide occasions for reconciliation of the lowlanders and their natural environments as well as reenactments of historical episodes in local Idanre history and its wider Yoruba ideology, mythology, and confederacy. It remains the focal point for many annual cycles of festivals. The Owa's palace, Belfry, Agboogun footprint, and thunder water and remains of a house containing the burial of the last king, a 19th century district Officers residence, a school, Colonial courthouse as well as shrines that continue to attract large number of pilgrims for special annual festivals are to be more preserved. Several official documents emphasize the need for sustainable development at world heritage sites and recognize its potentials in contributing to the socio-economic well-being of the inhabitants of the areas. Aside the intrinsic value of cultural and natural site which necessitates its preservation, Nigeria's government sees it in the context of employment for locals and possible revenue generation.

RELATED WORKS

In Tichaawa *et al.*, 2017, the fast-tracking and synergistic interface between ICT and tourism in recent times have brought about necessary changes in the industry and in its receptiveness to the former, in both developed and, increasingly, developing contexts. The espousal of new technologies has reformed the whole process of tourism service development, management, and marketing, as well as the entire tourism industry. Due to their increasing impact on the efficiency and effectiveness of tourism establishments, ICT may be seen as being a fundamental part of modern tourism business.

Hence, Mihalic and Buhalis, 2013, posit that the tourism industry has undergone some important changes due to the innovative developments brought about by ICT. In the available literature, ICT has been broadly used as referring to multiple communication technologies, including the wireless internet and smartphone applications. Digital radio, television, and cameras are creating a new global marketplace that is more competitive by the day. According to Stiakakis and Georgiadis, 2011, and Tichaawa *et al.*, 2017, ICT has gradually generated a new paradigm shift, altering the tourism

industry's structure, and developing a whole range of opportunities and threats. Consequently, Aghaei *et al.*, 2012, provide a convincing argument when they postulate that ICT provides a powerful tool that can bring advantages to the promoting and strengthening of the tourism industry's strategy and operations, in general.

Consequently, the impact of ICT in enhancing the management of the natural and cultural heritage resources of Idanre hills and its environs for tourism attraction cannot be underestimated, since they are a crucial driving force in the current information driven society. Existing scholarship that has focused on examining how ICT has in recent time played an important role in reshaping the tourism industry, most agree that ICT has provided and continue to provide a range of opportunities, for sub-sectors such as tour operators, accommodation, restaurants, and travel agencies in a globalized context.

Furthermore, a major contribution that has been touted for the tourism industry also includes improving productivity market and market share (Muneta and López, 2013); (Buhalis, 2003); (Buhalis and Molinaroli, 2002); (Chandler and Munday, 2011); improve competitive advantage (Buhalis, 1998); (Buhalis, 2003); (Namasivayam *et al.*, 2000); and business performance (Shanker, 2008), as well as reducing operational costs (Bojnec and Kribel, 2004); (Dimitrios Buhalis and Kaldis, 2008); and (Dimitrios Buhalis and O'Connor, 2005).

Chen *et al.*, 2013, perceive tourism to be a powerful wagon for socio-economic advancement and development, and, as such, small businesses are seen to be creating capacity for people to engage with the industry. However, the past decade's development of ICT and social media has dramatically influenced and changed how tourism and hospitality sectors produce, market, and deliver their products, with their use having, unquestionably, become an essential tool and strategy. Karimidizboni, 2013, states that the accelerated collision between technology and tourism in recent years has brought about indispensable changes in the understanding of the nature of tourism, with all its economic ramifications, within the tourism industry as a whole.

Werthner and Klein, 1999, show the relationship between the overall ICT, using the internet as an example, and the variables are linked to it from

a tourism perspective. Subsequently, a chain of communication is created. The overall structure of the industry has been transformed since ICT and the internet have become the essential communication tool for the industry. The availability of internet resources and the internet itself offers the tourism industry opportunities to provide wider, deeper and more customized offerings than before to a pool of clients, by achieving active relationships at affordable cost, and without substantially altering the quality of information delivered.

According to Shanker, 2008, the contemporary information society has made tourism a highly information-rich and intensively structured sector, as the dispersion of ICT has huge potential impacts for the tourism business. Alam and Noor, 2009, state that the business world has become deeply influenced by ICT, with the application of ICT among businesses being widespread. The impact of ICT on businesses relates to the facilitation of communication among organizational stakeholders, with it serving as an effective sales channel, and providing an effective platform for engaging in marketing and other like-minded pursuit.

In the light of the above, ICT has become important tools in terms of an organization's capabilities to endure and to extend to a position of advanced competition in the global economy, and, moreover, in the digitalized economy (Parsons and Oja, 2013). A nexus between tourism and ICT can, unquestionably, not be established without ICT having given organizations new managerial ways in which to retrieve information (Alam and Noor, 2009). The last decade's development of ICT, and especially of the social media has, undeniably, reinvented how the tourism and hospitality industries produce, market and deliver their offerings, as well as communicate both internally and externally (Leung *et al.*, 2013).

Lee and Wicks, 2010, and Law *et al.*, 2009, argue that ICT has become an invaluable business tool and strategy that is capable of being used efficiently within the travel sector. Nonetheless, its use does require up-to-date knowledge of the latest technological trends. A glance at the above narrative has shown that, while tourism and ICT have become an important research theme in the last decade, analysis that focuses on such a phenomenon from an African perspective, and particularly on those who seek to unpack

the impact of ICT on the tourism sector, is still regrettably scant.

MATERIALS AND METHODS

The research approach adopted for this study was a case study blueprint (Tichaawa *et al.*, 2017). The adoption of such an approach is common, with it having previously been applied in scholarship focusing on information systems and ICT. Veal (2011) suggests that case studies can be empirical in nature and that they study a contemporary phenomenon within a real-life context (Tichaawa *et al.*, 2017). Since the aim of the current research was to study the impact of ICT in enhancing the management of natural and cultural heritage resources in Idanre hills for e-tourism attraction businesses in Idanre and Nigeria as a whole, a case study approach was deemed appropriate by the researchers, as it presents an opportunity to select cases for observation.

Relevant internet sources, including documentary video from Ondo State Ministry of Culture and Tourism were used. Stratified random sampling technique was used to collect primary data, with the assistance of a semi-structured questionnaire. The tourism businesses identified in were stratified into three groups: Hotels; travel agencies; and tour guiding companies. Within the named strata, the participants were randomly selected, so as to give each of the subgroups a fair chance of participating in the study. Purposive sampling was used to identify the participants with knowledge about the current business and activities in terms of its performance and satisfaction relative to ICT. The questionnaire used was based on the competitiveness resource model developed by Mihalič and Dmitrović, 2000, which has previously been applied in previous research on the impacts of ICT on various industries (Prašnikar, 2000). The model was deemed suitable as the basis of the currently employed questionnaire since the model in question measures the impacts of ICT in enhancing heritage resources management for e-tourism attraction. Respondents were requested to rate the impact of ICT in enhancing heritage resources management for e-tourism attraction: Using the following descriptors that are all employed in this study: Increased competitiveness; speeded up service; increased market share; heightened customer satisfaction levels; improved company image; reduced business operating

costs; improved profitability; and opening up of new markets (Mihalic and Buhalis, 2013).

A 4-point Likert-type scale with the option of strongly agreed, agreed, disagreed, and strongly disagree and with a weighted scale of 4, 3, 2, and 1, respectively, was employed in the questionnaire to illustrate the impacts of ICT in enhancing heritage resources management for e-tourism attraction. Each statement item highlighting a particular perception was used to calculate the mean weight value or mean of a group data and recorded. The group arithmetic mean (GAM) was applied to all the calculated mean of a group of items under each subheading and recorded. The GAM result was then used as a baseline for determining the cutoff mark to accept or reject a variable item as being accepted or rejected by the majority.

Components of tourism as tools

Detail assessments of the level of development of the cultural and natural features in Idanre hills and its environs were also carried out, and the assessments revealed information on their developmental status. This was done based on the four components of tourism, namely; (1) attraction, (2) accessibility, (3) accommodation, and (4) amenities.

Attraction

- It is the most important element and object that attract people to travel.
- It includes cultural sites, archeological sites, historical buildings, and monuments or scenery such as flora and fauna, beach, resorts, mountains, and national parks.
- It also includes events such as trade fairs, exhibitions, and sports events.
- It is the preconditions of travel. It attracts people and provides pleasure.
- It attracts and attaches people to enjoy and involve in tourism activities.
- Two types of attraction:
 - a. Natural attraction: Attraction places made by nature, for example, climate, natural beauty, landscape, mountains, water resources, flora and fauna, wildlife, beaches, safari, and caves.
 - b. Man-made attraction: Attraction developed by man, for example, historical buildings,

monuments, music, festivals, temples, churches, leisure parks, museums, and discos.

Accessibility

- It is important key factor for the development of tourism.
- Attraction may be wherever but without accessibility cannot reach toward that place.
- It is the mode of transportation which helps the tourist to reach the destination.
- Three types of transportation:
 - a. Surface: Transportation inland through roadways or railways. It is the cheapest means of transportation.
 - b. Air transportation: Transportation through airways to travel a long distance. It has helped a lot as people can travel long journey over the ocean, sea, and through high mountains.
 - c. Water transportation: Transportation through the water. It made important contribution to travel in 19th century after the innovation of shipping technology.

Accommodation

- It includes food and lodging facilities to the guest.
- It should be comfortable; services and facilities should be provided.
- Two types of accommodation:
 - a. Serviced accommodation: It refers to the services provided by the hotel, lodges, etc. Different hotels are established to provide service of lodging and food to the guest.
 - b. Self-catering or supplementary accommodation: It refers to the premises which offer accommodation but not the services of the hotel. It provides food and accommodation in return for cash per day, for example, Youth hostel and Tourist holiday villages.

Amenities

- Extra facilities and services required to the guest while traveling.
- Facilities complement to the attraction.
- It also provides facilities such as providing visa and tickets.

- Two types of amenities:
 - a. Natural: Seashores, sea bath, fishing, rock climbing, trekking, sightseeing, river, sunrise, etc.
 - b. Manmade: Dance, music, drama, cinema, swimming pool, fair and festivals, internet, etc.

E-commerce for tourism design

The World Wide Web (web) is a client/server application layer on top of the internet that provides simple standard protocols for naming, linking and accessing virtually everything on the Internet (Davis and Benamati, 2003). The internet provides a set of interconnected networks for individuals and business to complete transaction electronically (Valacich and Schneider, 2009).

The key technological infrastructure component of e-commerce includes the web server hardware platform with the appropriate software. The web server must run on an operating system, and in addition to this, each e-commerce website must have web server software to perform fundamental service which may include the security and identification, retrieval and sending of web pages, websites tracking, website development, and web page development, the e-commerce which supports adverts on the site, catalog management, product configuration, shopping cart facilities, and e-commerce transaction processing and web traffic data, a high-speed connection to networks and internet.

Internet is the collection of all computers that can communicate using the internet protocol suit, with the computers and networks registered with the Internet Network Information Centre (InterNIC). The internet allows communication between millions of connected computers worldwide. Information is transmitted from client PCs whose users request services in response to requests. The internet is a large scale client/server system, the client PCs within homes and businesses are connected in the internet through local internet service providers (ISP) which in turn are linked to larger ISPs with connections to the major national and international infrastructures. The e-tourism system has the basic component of catalog of product, shopping cart, check out, payment gateway (payment processing network), customer account, internet merchant account, and company account. Customers can browse the catalog of

tourism product and shop carts it. The gateway component accepts credit card details and sends to the payment gateway for authorization on the premise of adequate security using the SSL technology (Oladeji *et al.*, 2013).

Funds are reserved into the customer account and later transfer to the merchant account, and then to the company account of the site. Figure 4 presents the conceptual diagram of e-commerce model for the tourism hills. One way to pass logic from a web server to a browser is to write a set of macro-like instructions called a script in a scripting language (java scripts). A script might be used to animate an image on a window, highlight an icon, or play an audio file when the mouse pointer moves over a spot on the client screen. Scripts are also used to validate the completeness and accuracy of the data input to a browser-based form. To add more interesting interactivity to a web page, applets, small programs executed from within another program such as a browser can be downloaded to a client. After a customer

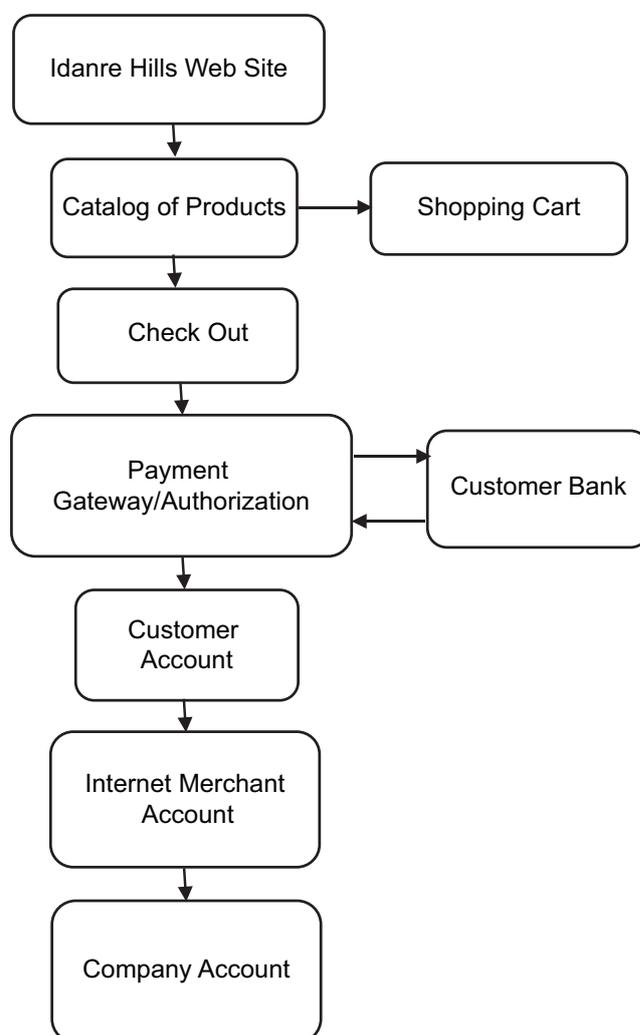


Figure 4: Conceptual e-commerce model for Idanre hills (Adapted from Oladeji *et al.*, 2013)

has chosen all he/she wants to purchase, then an invoice is processed to specify in detailed term what needs to be paid and for what items. Booking can also be included in this module.

Payments are an integral part of business, whether in the traditional way or online. The most common methods as discussed in Turban and Linda, 2010, for electronic payment system in E-commerce includes the Electric credit card, Electronic bill payments (Online banking, Biller direct, and Bill consolidator), E-Wallets (digital wallets), Virtual credit cards, and Payment using fingerprints. The system employed the VISA and the MasterCard card that are recently available in most of the Nigerian Banks. In Ciampa, 2009, there are several network security devices that can be used to protect the network from attacks. These include firewalls, proxy servers, honey pots, network intrusion detection systems, host and network intrusion prevention systems, protocol analyzers, internet content filter, and integrated network system hardware.

RESULTS AND DISCUSSION

Analyzed in Table 1 is the analysis of variance (ANOVA) perception of respondents about the impacts of ICT on the tourism business. The employed questionnaire measures the impacts of ICT in enhancing heritage resources management for e-tourism attraction. Respondents were requested to rate the impact of ICT in enhancing heritage resources management for e-tourism attraction: Using the following descriptors that are all employed in this study: Increased competitiveness; speeded up service; increased market share; heightened customer satisfaction levels; improved company image; reduced business operating costs; improved profitability; and opening up of new markets.

Based on the tourism businesses such as hotels, travel agencies, and tour guiding companies on whom the descriptors that were employed were measured; having randomly selected the participants, so as to give each of the subgroups a fair chance of participating in the study; results on Table 1 show that ICT has great impacts on increased competitiveness, reduced operating, and improved profitability yielding mean values of 189.2 in all the three descriptors.

ICT heightened customer satisfaction levels with a mean value of 193.2. It speeded up service and encouraged opening of new markets with mean values of 185.1. To some respondents, ICT has little contribution to add to increasing market value and improving company image with evidence of poor mean value of 102 and 106.1, respectively. The educational level of the respondents and their marital status greatly affected the response got from the questionnaire. It was discovered that more than half of the tourists are single while below average are married, divorced or separated. This study, therefore, links the response got from respondents to their IT literacy which clearly shows that educated people and single people are more involved in e-tourism.

The results generated from the ANOVA showed that more women than men were found to be involved in tourism-related businesses at the owner level. Such finding is vital in Idanre and Nigeria as a whole among the self-reliance. However, of said percentage, very few indicated having either tourism or hospitality-related qualification. In addition, most of the businesses indicated that they had been in operation for a long period of time.

Many people believed that with ICT, Idanre hills possessed the natural and cultural features that can make it rank as one of the high ranking resort center in the world. Evidence from this study suggests that, in the context of Nigeria, it can be argued that ICT has had an inexorable impact on many of

Table 1: ANOVA perception of respondents about the impact of ICT on tourism business

S. No.	Impact variables	SA	A	D	SD	Mean	Remark
1.	Increased competitiveness	246	247	60	47	189.2	Accept
2.	Speeded up service	206	279	75	40	185.1	Accept
3.	Increased market share	60	50	140	350	102	Reject
4.	Heightened customer satisfaction levels	301	181	70	45	193.2	Accept
5.	Improved company image	20	22	357	201	106.1	Reject
6.	Reduced operating cost	247	246	60	47	189.2	Accept
7.	Improved profitability	247	246	60	47	189.2	Accept
8.	Opening up of new markets	206	279	75	40	185.1	Accept
	Overall impact of ICT on GAM					167.4	

ANOVA: Analysis of variance, ICT: Information Communication Technology, SA: Strongly agreed, A: Agreed, D: disagreed, SD: Strongly disagree

the country's economic sectors and their related performance. Therefore, the country's tourism and hospitality subsectors cannot be excluded from such impacts. ICT makes it possible for tourism businesses to disseminate information about available tourist products and services before travel, apart from increasing the possibility of such ICTs enhancing tourists' satisfaction levels.

CONCLUSION

Presented in this paper was the impact of ICT in enhancing the management of natural and cultural heritage resources in Idanre hills for e-tourism attraction. Nobody can underestimate the role of ICT in the tourism industry as it is an important driving force in the current information driven society. New tools have been provided by ICT and new distribution channels enabled making the creation of new business environment possible. Many business transactions in the tourism industry such as online booking arrangement have been facilitated by ICT tools through e-commerce which allows the communication of business transaction with trading partners, distribution of product services, and providing information to consumers across the globe. Therefore, for tourism businesses to increase their competitive position, the conclusion is drawn that they should incorporate ICT in their business practice so as to increase their performance. As a result, tourism enterprises need to understand, incorporate, and utilize ICT systems strategically to: (1) Serve their target markets; (2) improve their efficiency; (3) maximize their profitability; (4) enhance their services; (5) and maintain their long-term profitability.

It is also worth emphasizing that with ICT; advertisement through both visual and audio media will intensify and induce awareness of tourists to the tourism site. Idanre hills have nothing <660 steps, to climb this is another task but, with lifts, tourist will be more encouraged to patronize the site. This can only be achieved technologically; another impact of ICT if put into use.

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