Envisaging Trends of Digitalization for Sustainable Tourism Business: Opportunities & Challenges

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Abstract

Digitalization is the doorbell of today's organisation. The economy today has revitalised with electronic mode replacing the manual operation. Incredible India campaigns information-communication-technology (ICT) on a global scale for tourism development in the coming days. The present study revolves around the ongoing avenues of digitalisation in the tourism business. The aim of this paper is to explore and investigate the prominent domains and items that may be considered in line with digitalization in the tourism sector globally. The literature of the study focusses on new technological development in the tourism sector through the adoption of robotic & automatic devices, innovation in digitalization, opportunities in internet technologies, IT-enabled HR practices in the tourism business, and the introduction of e-business systems for sustainable tourism. The paper attempts to reveal domains and items along with possibilities and potentialities of ICT for organisations operating in the Tourism sector. The coverage of the study is pertinent amidst fluctuating business environment and the scope of digitalization will lead to the flourishment of 21st century tourism business houses worldwide.

Keywords

Digitalization, Tourism, ICT, (Information-Communication-Technology), Innovation, Development.

1. The Emergence of Information Technology and Tourism Business

Information and communication technology is the indispensable foundation of today's industrial infrastructure which has transformed all the sectors of the economy globally. Information and Communication Technology (ICT) has revolutionised technological advances and the service industry by leaps and bounds. Technology supports man, machines at different levels of the hierarchy of the organisation ensuring

faster, smarter and speedy actions and optimising the efficiency, energy, time, and simultaneously value of money. ICT creates opportunities to utilise time, place, and energy resources at an optimum level. Technological development and tourism have close connectivity since steady growth is experienced in the respective domains during the last fifty years. Information and Communication Technology influences tourism technology on a large scale along with accelerated business practices and development strategies. Tourism and hospitality is the fastest growing industry in the present economy (Buhalis, 2008). The tourism industry is characterised by the work culture of professionalism and showcased as service-centric industry. In the last three decades rapid technological transformations in forms of computerisation, automation, hotel booking, global distribution system, rail applications, and developmental technological changes are inevitable in three directions viz radical changes in existing industries, destination travel, and many more which has transformed tourism business as an e-tourism sector. Development of new industries and increase of new market and industry in the fields of tourism innovation can be characterised by four key driving forces namely tourists, tour operators, technological changes and competition. Information and Communication Technology (ICT) has a wide impact since it changes the entire tourism structure and attempts to develop new avenues and confronts threats for all the participants in the tourism industry. The paper tries to establish the upcoming ICT opportunities and advantages for the tourism industry and focusses on new technological developments for tourism business in the coming days. Despite having the wide influence of ICT in all the sectors, tourism is being considered as the a highly sensitive sector. The manifold utilities of ICT representing accessibility of information, knowledge sharing, increasing efficiency, accessibility at minimal costs have crossed beyond boundaries and created a strong impact on the tourism sector at large. The issue of transparency and reliability at lower prices has been managed by the technological innovations which have a strong impact in the domains like internet, development of mobile and wireless telephony, multimedia inter-operability, accessibility for people with disabilities all contributing to the growth and sustenance of tourism business. The paper provides a substantial finding of the emerging trends of digitalisation with relevant sphere and the possibilities related to ICTs in the tourism sector to accommodate a better tourist destination for the tourists world-wide.

2. Objectives of the Study

The specific objective of the current paper is to identify and define a set of select domains and items in tune with the development of ICT in the Tourism business for sustainable development. The specific objective of the paper can be understood in the light of the following

- To define the domains
- To define the items relating to each domain based on literature review
- To ascertain the challenges in implementing ICT in Tourism Business

This is being done towards the preparation of a scale as a research tool in the area. The study hovers around in exploring the key constituents and major domains attributable to digitalisation in the tourism sector. The paper will highlight the main role of ICT in the tourism business and subsequently generate value with the usage and advancement of technology available worldwide. The central theme of the paper aims towards exploring varied technological features and to increase the level of information security for the organisations and in the tourism sector towards making maximum usage of the effects of the technological innovations.

3. Rediscovering the Impact of ICT on the Tourism Business

The world today has been witnessing accelerated, automated, and synergistic interaction between technology and tourism which has transformed the tourism business as well as our age-old perception of the world. The increasing pace of technology has stepped every corner of the economy and played a predominant role in building professionalism, completeness and efficiency for every sector of tourism companies and destinations at large. The gradual development of mobile communication, telecommunication devices, internet search engines, increasing transmission capacity, network speed has attributed to plan and program travels for every individual at large. The tourist industry stands on the platform of sharing domains where buyers can share information, production, specification, product processes regardless of geographical boundaries with the increased access of ICT worldwide. Internet-based pages characterised through the quality of service, the eagerness of friendly access usefulness, liability, personalisation have made tourism business more personal rather the regional. The up-gradation of mobile technologies enables tourists to avail all amenities like reservations booking, getting information, trip schedule with

improving efficiency and less time usage. The behavioural pattern of the tourists has undergone a revolutionary change with the advent and access of IT through manifold aspects viz facilitating information domains, qualitative tourist experience, price sensitivity, interactive communication, varied tourist product, online shopping, the impact of virtual community and many more. Rendering satisfied services is the belling tone of today's tourism. Tourist organisations need to concentrate on the collection of customer data and the details of the journey and trip with behavioural patterns of the clients backed by technological innovation skills, reorganised communication, and a digital framework. Hotel companies are on the queue for gaining appreciation, rewards, facilities by way of customisation and better contribution of IT generated products. Technology has become the nucleus of all economic activity which has shaped the core of all business activities. Every aspect of our life is changing and ICT acts as a bridgeway towards the survival and transformation of business linked with technological gadgets and varied mediums for prosperity, progress and potentiality. ICT has become the new horizon of a new 21st century generation designed with new applications and has become the strongest tool for the hospitality industry along with a large influence in the upcoming trends of the tourism business.

4. The Congruence of Information Technology and HR Element: An Overview

Organisations thrive on people. At the heart of all excellence at work, it is the degree and the potential of human commitment that matters most. The people factor at work is the most vital element of today's organisation. People today are largely acknowledged by business organisations as key resources and valuable assets at work. Tying knot with information and communication technology, human resource practices, and models can be upgraded, enhanced, and developed for organisational escalation. IT-enabled HR element acts as a backbone for qualitative performance and effective productivity with the generation of value system in the tourism business. The tourism industry essentially requires a significant amount of information on various domains. The impact of IT on tourism is vital for everyone as it is the information that is the source of all successful outcomes. The management of human resources at this juncture needs careful attention for its potential need and use of every employer of today's organisation. The congregation of human factor & information and communication technology focuses on

strategic objectives leading to the preparation of IT strategic plans with and that in turns into an appropriate strategic human resource plan in the IT arena. The epicentre of human resources application starts its journey where organisations aim to deliver state of – the - art human resource services through a developed model and systematic mechanism popularly as the Human Resources Information System (HRIS). HRIS basically aims to the systematic mechanism and processes at the intersection between human resource management (HRM) and information technology. It is a perfect blend characterising the elements to acquire store, analyse, retrieve and distribute pertinent information about an organisation's human resources. The foremost challenges in the application and utilisation of this tech systematic mechanism in the fullest possible ways are embedded in the appropriate level of exploration and utilisation of potential human resources. The manifold wings of technology have spread their sphere in multiple ways and in wide dimensions throughout the world. It has become the most indispensable and essential tool for business growth in every organisational hemisphere. The effectiveness of IT-driven by successful HR practices in the tourism industry can be portrayed in the following figure depicting the core elements of human resources and their attributes towards effectivity of ICT.
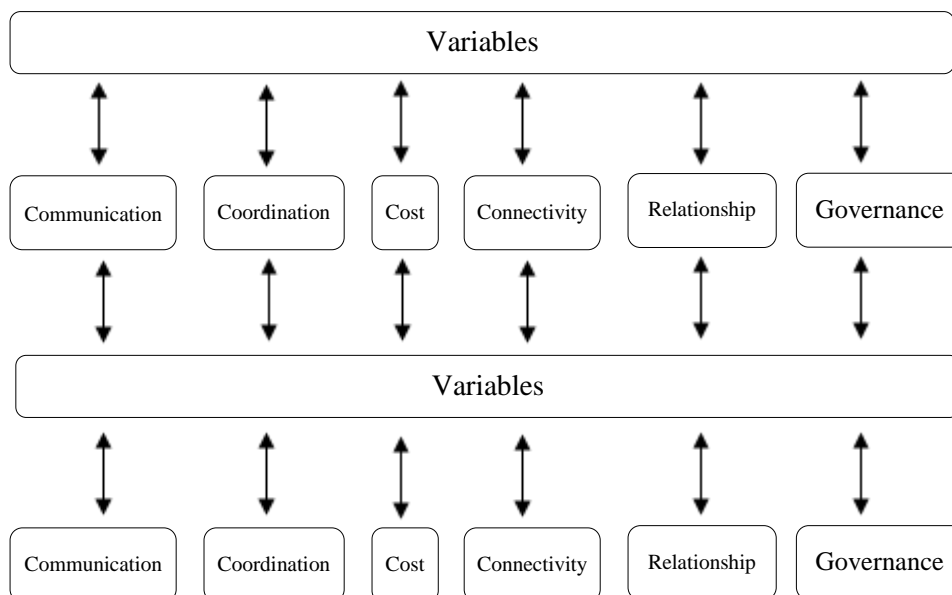

Figure 1: Inter-connectivity between HR & ICT

Tourism business digitalisation HR activities begin with recruitment, training, and development, personnel management of employees. Technological solutions have become the heartbeat of every organisation and tourism business functions its prime activity including tourism, travel, transport, leisure, hospitality all backed by HR and influence by the emerging capability of information technology appraisal. Human elements spawn through unique talents, performance, innovations comprising the essential ingredients for the growth and development of tourism. The entities of tourists are channelized with the HR potentials and possibilities for expansion of tourism globally. The three 'M's man-money-machine may be connoted as '3T's tourist-travel-tourism signifying the man in terms of tourist playing the pivotal role in the travel voyage of tourism escalation and survival.

5. Avenues in Internet and Related Technologies in Tourism Sector

Studies reveal that the recent trends for ICT infrastructure and development have reached the boom phase and its impact on gross domestic product (GDP) has a wide significance among various nations across the globe. The usage and the utility of broadband and related technologies are diversified in nature ranging from tourist authorities, tour operators, travel agents, hotels, tour guides, taxi operators, beach operators and ancillary service providers. The usage of broadband and related technologies has brought varying changes in the bargaining powers of stakeholders of the tourism industry and has transformed the business scenario of the tourism business. The internet is an integral component of digitalisation and its gradual development has created opportunities among millions. Access and usage to superfast broadband facilities have the potential to increase growth, innovation, and productivity in the tourism economy. Reinventing the power of the internet for day-to-day functioning is the prime issue for the stakeholders in the tourism sector. Broadband internet facility has become the essential input and has enabled the tourism sector to achieve a substantial share in the global marketplace. The advantages and rewards of the internet have crossed boundaries bringing more openness to the whole tourism chain. The dimension of the internet has changed the way people communicate, search information, takes decisions with a holistic transformation in the whole tourism business. With the internet tool, tourists and travellers can contact travel agents directly without any intermediate barriers to get better tourist amenities at a competitive

advantage. The ICT generates fundamental changes in the nature and application of technology in the business and creates immense benefit in promoting and strengthening competitiveness in the tourism sector. The dynamic nature of internet facilities can be outlined ranging from the bargaining power of suppliers, threat of new entrants, rivalry among existing competitors, threats of substitutes, and purchasing power of customers. Internet connection has been characterised by an online information system, online marketing system, online payment system with the domains viz. web hosting, social networks, websites, LinkedIn, Facebook - all have embraced and strengthened the tourism hemisphere. Despite having multifaceted utilities, challenges of ICT can be visualised in respect of speed and connectivity. Information overload is of prime concern of any economy and fast internet connections are highly desirable for easy access to all concerned for the tourism economy. The qualitative aspect of broadband facility needs to be taken care of where it has been seen that poor availability of internet connection and inadequate connectivity speed results in creating a question of commitment and reliability in the tourism industry.

6. Implementation of Robotic and Automated Service Mechanism in the Tourism Business: Prospects and Challenges

Despite a substantial advancement in the technological arena, the use and adoption of robotic machineries can be traced in the tourism business amidst wide arena of tourism business entailing hotels, restaurants, events, themes, amusement parks, airports, travel agencies, tourist information centres, museums, art galleries and many more - the usage and utility of robotic mechanism and automation services are quite insignificant in the present scenario. In the recent days, the world has been witnessing remarkable progress in artificial intelligence, robotic, and service automation which is primarily used in production houses, transport sector and automobile sector, warehouses and supply chain management. Studies reveal that the utility and the advantages of technological advances in the form of service automation and robots have gradually started their footstep in the travel – tourism – hospitality periphery. Robotic technologies have made their pathway into the tourism industry grasping major areas of hotel operations byways of self-service facilities, check-in kiosks, mobile applications trackers for the visitors benefiting the client and the customers with minimum time and maximum efficiency, faster pace and ultimately fostering improved

customer experiences. Robotic services can be broadly categorised as industrial robots and service robots wherein industrial robots are involved in the industrial tasks and on the other hand service robots are engaged and support individuals through human and social interactions. Tourism as the prime service industry has gained a mark in the usage of professional service through robots in hotels, robots in restaurants byways of the front desk, robots to deliver, portal robots in hotels where robots serve and robot chef, robot bartenders in the restaurant to entertain and satisfy various customers as per their convenience and comfort. Recent trends reveal that restaurant businesses have already launched automated food delivery methods with an updated mechanism of food delivery to the dining tables that looks like roller coaster tracks. Even so, the automated process of ordering, selecting, preferring, commenting, and accepting orders has taken the stage on a touch screen modes. Voice recognition equipped with artificial intelligence fosters communication with the customers are one of the prominent automation adoption modes of the tourism business. The hotel industry in the tourism sector has been touched by the automated cooking process where 3D devices are being used and varied dishes are cooked by the robots to serve the clients. The travelling experience has reached the height of pleasure and comfort while automation plays a significant role in the e-travel experience through speedy service, increased efficiency, and greater security. Self-service facilities, self-service gates are being managed operated, and regulated by the robotic mechanism through varied functions like scanning the boarding pass of the tourists, storing luggage, and many more to make the journey hassle free, risk free and joyous. In-spite of having the robotic revenue in the tourism business it is the ability of the human being to envisage and visualise the ways and means that robots will be utilised in an efficient way in the days to come.

7. Technological Innovation of E-business System: Way towards Sustainability in the Tourism Sector

E-business strategy is the ringing tone of 21st century business houses. The ICT stands as a backbone for the organisations and businesses either small, medium, or large has stepped forward in the development of technological innovations and their impact on future business. The lifecycle of ICT in any organisations is based on the workload and the outflow of the structure on the online system and design with the IT assets and resources. The entire business operating in the tourism sector

has broadened its dimensions through management of various processes with an increasing drive for adopting reliable, safe technological know-how for a successful outcomes. Studies reveal that most of the business organisations operating in the tourism sector are confronting barriers in the formulation and adoption of e-business strategy resulting in an insufficient assessment of the impact of technological innovations and lack of insight. E-business strategy can be defined as an application of ideas that contributes to or shift in management thinking resulting in the introduction and growth for economic efficiency. It is based on the modular principle which guarantees multiplicity for organisational operations and performance of specific functions. Statistics reveal that in in recent times a large number of companies have engaged and involved their day-to-day activities through e-module i.e. carrying of communication, conferencing mail in order to establish a strong online structure accessible globally. The instant result and the outcome enjoyed by the potential users of e-business resources create opportunities for direct contact to potential customer partners and various stakeholders. E-business resources provided by the tourism industry through online management system, online customer management system acts as a tool to indulge the productive development and business. Unfortunately, a mammoth portion of the tourism economy comprising small & medium enterprises is deprived of the benefits of e-business resulting lack of innovations and technology in the area. The prime task of e-business solutions is based on providing access to online information systems and resources to consumers, employees, partners, and contractors which acts as a backbone of the service system. Largely in the tourism sectors, various mandatory operations like maintenance of websites, electronic catalogue, online booking tool, and payment tool, and feedback forms – e-businesses act as a bridgeway of activity to many. Ideally the financial base of the tourism industry needs to be regenerated and revitalised for the incrementation of e-business resources to the level of high-class server to the community at large. E-business resources used by the organisations is a mechanism that is used widely and available with open solutions at free of cost. E-business solutions use the existing network structures devoid of any additional installation of a new structures. E-business solutions can be used from one to many with their flexibility potential depending on the activity of the online users and business entity.

In the present turbulent, fluctuating business environment which has affected all the sectors of the economy, use and reuse of technology and stimulating the uses of e-business is a step forward for sustainable use of technology by the organisations for better prospect of tourism business in the coming days.

8. Innovations in Customer Relationship Dimension: Tourist Satisfaction Destination Link

Customer satisfaction is a business process intended towards improving service quality & satisfaction for the consumers at large. Tourism is one of the foremost contributing source of nation's GDP in recent years. The philosophy of Customer Relationship Manager (CRM) understands the needs of the tourists as customers and design integrated communication with them to create a qualitative relationship and satisfaction platform in the tourism sector. A commendable influx of tourists boosted the foreign exchange earning with the accelerating growth of annual growth and ranking 30th in the world tourist arrival as per the Indian tourism statistics. Tourism today is the most vibrant territory activity wherein understanding tourists and application of innovative models in the development of service quality in tourism is of prime significance. Service quality has been recognised as a critical prerequisite and determinant of competitiveness for ensuring the sustainable, satisfying relationships with the customers. Blending innovation, technology and quality attributes pave the way for tourism satisfaction. It is the level of satisfaction that is being characterised as one of the dominant variables influencing the revisit intention of the tourist amidst globalisation of the market, competitive pressure, brand multiplication, ever changing life satisfaction, and consumer behaviour. The key variable of tourist satisfaction and its loyalty destinations need to be reviewed and redesigned for tourism promotion. The hotels, restaurants, tour arrangers and down-the-line service providers coupled with technology play the key role to avail access services on virtual platform in the present scenario. Fulfilling the tourist's expectations at an optimum level has resulted a positive effect on destination loyalty. Experiencing high-end customer satisfaction in terms of quality creates avenues for promoting tourism business in the days to come. Experiences expressed by the tourists in terms of proper integration of tourist's people process and technology with personalised services & human touch establishes a strong foundation of tourism destination.

9. Research Methodology

The study has been based on secondary data sets on the tourism sector of India collected from December 2019 to January 2020. Based on the literature study and understanding essentially considered in the paper are rediscovering the Impact of ICT to the Tourism Business, The Congruence of Information Technology and HR Element: An Overview, Avenues in Internet and Related Technologies in Tourism Sector, Implementation of Robotic and Automated Service Mechanism in the Tourism Business: Prospects and Challenges , Technological Innovation of E-business System: Way Towards Sustainability in the Tourism Sector, Innovations in Customer Relationship Dimension: Tourist Satisfaction Destination Link. The research methodology was a qualitative one using secondary data. This would be considered as Independent Variable and the notion of Information and Communication Technology for Sustainable Development as Dependent Variables. The scale design thus is an attempt in this paper revolves around the identification of whether the independent variables (broad domains) affect the dependent Variables i.e $Y = (X)$ and to what extent, if Y implies Information and Communication Technology and X implies the broad domains drafted in the scale.

10. Findings & Discussion

Finding I

From the literature explicated in the paper, a clear attempt has been made to identify the items under the broad domains revealed from the study. The five broad domains are:

Domain A: Integrating Information Technology & HR for Tourism Development

Domain B: Upholding Avenues in Internet Related Technologies for Tourism Development

Domain C: Implementing Robotic and Automated Services for Tourism Business

Domain D: Introducing Technological Innovation of E-business for Sustainable Tourism

Domain E: Managing Innovations in Customer Relationship for Tourism Progression

Each of the above domains can be independently considered to arrive at a handful of items. The items have been generated from the detailed literature study which has been a significant part of this paper.

Finding II

Defining Sub Domains/ Sub Scale under each domain

Table 1: Defining Sub Domains/ Sub Scale under each Domain

Domain	Sub Domain/ Sub Scale
A. Integrating Congruence of Information Technology & HR for Tourism Development	A.1 HR is considered as a key resource factor
	A.2 Integrating ICT & HR builds organisational escalation
	A.3 Strategic HR & IT Plans helps Tourism Development
	A.4 HRIS & HRM contribute Tourism Business Growth
	A.5 IT-driven HR practices enhance Tourism Business
B. Upholding Avenues in Internet Related Technologies for Tourism Development	B.1 Usage of Internet and related technologies transformed Tourism Industry
	B.2 Broad Band Internet facility created openness in Tourism chain
	B.3 Internet facilities create an immense facility in Tourism promotion
	B.4 Internet connections with online facilities creates access for all in Tourism Development
	B.5 Dynamic nature of Internet facilities fosters reliability and commitment in the Tourism business.
C. Implementing Robotic and Automated Services for Tourism Business	C.1 Usage of Robotic services creates avenues in the tourism business
	C.2 Robotic technologies create efficient self-service facility in Tourism Industry

	C.3 Automation services benefit clients and customers with minimum time and maximum efficiency.
	C.4 Robotic services create professionalism in the Tourism business
	C.5 Automated robotic services generate revenue with hassle-free and risk-free Tourism business
D. Introducing Technological Innovation of E-Business for Sustainable Tourism	D.1 E-business strategy is the future of Tourism business
	D.2 E-business results in the growth of Tourism economy
	D.3 Day-to-day E-module activities establish a strong online Tourism business
	D.4 Technological E-business create potential customers
	D.5 E-business solutions provides universal access to all the stakeholders
E. Managing Innovations in Customer Relationship for Tourism Progression	E.1 Customer satisfaction is the ultimate outcome of Tourism business
	E.2 Blending Service quality with customer satisfaction builds global tourism promotion
	E.3 Customer relationship destinations play a key role in tourism growth
	E.4 Virtual tourism platform integrates tourists and promotes tourism business

Finding III: Key ICT Tools for Tourism Development
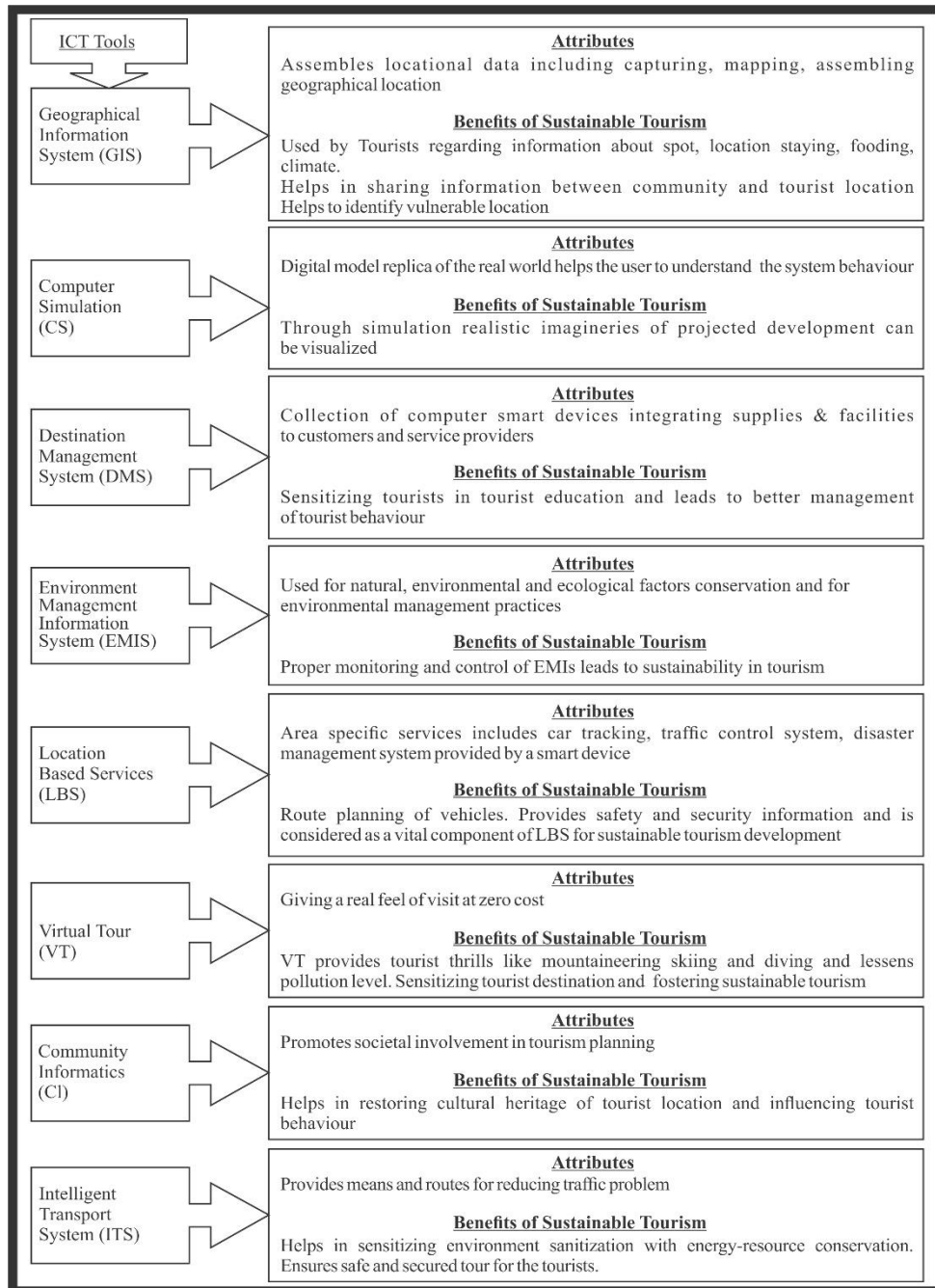

Figure 2: Key ICT Tools for Tourism Development

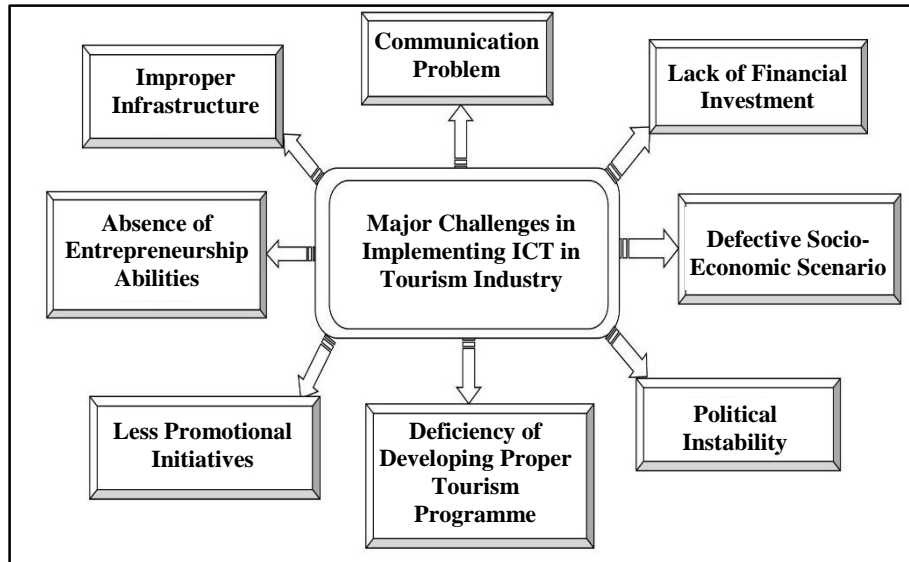**Finding IV: Challenges in Implementing ICT in Tourism Industry**

Figure 3: Challenges in Implementing ICT in Tourism Industry

11. Implications of the Study

The Indian tourism sector has come up as one of the key drivers of growth of the Indian economy. The age-old traditional concept of "Atithi Devo Bhava" meaning the "Guests are God" is the new dimension of Incredible India. India's tourism Parampara (tradition) has undergone the voyage of experience and transformed itself with a fresh look of e-tourism. The crux of the tourism business lies in the understanding of its uniqueness and the trend from time to time. The present study highlights the prominent and upcoming domains of information technology and innovation potential to boost the tourism sector as well as create avenues in alternative tourism and ensuring sustainable tourism. The paper traces the recent trends and developments of tourism business with new system technology for tourism promotion and development both in the short and long-term destination. With the emergence of new terms and alternatives in terms of ICT, the need for infrastructure development is the call for the hour for tourism business. Tourism is the first growing sector in the post-globalisation era has the thrust to adopt and attitudes towards innovation and thus keeping in view the rich culture and heritage tourism in the nation's tourism. Organisations are increasingly connecting equations

between sustainability and its impact on their organisations. Trust and reliability upon the dedicated trust force on the organisations have opened dynamic sphere of organisational sustainability. The paper thus upholds and attempts to identify the five broad domains and the items within. The essentiality of the study is in the fact that tourism development can be fostered through the digitalised pathway aiming towards business sustainability in the long run over time. Like every other business, the tourism business has to confront the problems posted by global financial crisis in the present fluctuating environment. Therefore, the vision and mission of tourism promotion may be followed in tune with innovation for sustainable tourism and economic development at large. The uniqueness of Indian tourism is the perfect blend of convention and innovation. Thus, India "a land for all seasons" should be envisaged to create an "Affordable Digitalized India" with the mission to visit India for tourism rejuvenation in the coming era.

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