Digital Technology in a Smart Tourism Destination: The Case of Dharamshala (Himachala Pradesh)

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ABSTRACT

Smart tourism is a new buzzword applied to describe the increasing reliance of tourism destinations, their industries and their tourists on emerging forms of ICT that allow for massive amounts of data to be transformed into value propositions .The paper defines smart tourism, sheds light on current smart tourism trends, and then lays out its technological and business foundations. This is followed by a brief discussion on the prospects and drawbacks of smart tourism. The paper further draws attention to the great need for research to inform smart tourism development and management. Smart tourism raises big issues with respect to information governance and correctly deriving the value of information. Given that information and communication technologies (ICT) have become increasingly integrated into the tourism industry, this article aims to emphasize the growing importance of ICT for smart tourism destinations. As a city, Dharamshala has been consolidating its position as a smart tourism destination by emphasizing tourists' experiences that are evaluated through innovation, communication, and interactivity with tourists/visitors. A survey of 220 tourists visiting the city provided the data for this study. The analysis focuses on the availability of ICT in Porto and its influence on tourists' decisions to visit the city. This information helps to determine whether the application and information available on the Internet had positively contributed to tourists' satisfaction in their visits to Dharamshala. In particular, this article focuses on the influence of ICT accessibility on tourists' choices of destination, their experiences, and their satisfaction. The results obtained can serve as insights for others to understand how tourists' behavior and experiences, their planning stages and their demand for information are affected by the availability of ICT, in the context of smart tourism destinations.

Keywords: Smart Tourism, Smart Technology, Communication Technology, Digital Platform, Dharamshala

1. INTRODUCTION

It is necessary to be smart in order to survive in the tourism industry. Smartness is required at each step, from generation of information to the communication of the information. Smartness facilitates the shaping products, actions, processes and services in real-time, by engaging different stakeholders simultaneously to optimise the collective performance and competitiveness and generate solutions and value for all. Usually the term smart is associated with being fast and giving quick results. The term 'smart' represents the things working on latest technology. Various researchers have been working on how to inculcate smartness to tourism industry by creating a proper framework. Smart has become a new buzzword to describe

technological, economic and social developments fuelled by technologies that rely on sensors, big data, open data, new ways of connectivity and exchange of information (e.g., Internet of Things, RFID, and NFC) as well as abilities to infer and reason.

Definition of the Concept

Smart tourism refers to the application of information and communication technology for developing innovative tools in tourism. It supports integrated efforts at a destination to find innovative ways to collect and use data derived from physical infrastructure, social connectedness and organisational sources (both government and non-government), and users in combination with advanced technologies to increase efficiency, sustainability, experiences. The information and communication technology tools used for smart tourism include IoT, mobile communication, cloud computing, and artificial intelligence. It combines physical, informational, social, and commercial infrastructure of tourism with such tools to provide smart tourism opportunities. The principles of smart tourism lie at enhancing tourism experiences, improve the efficiency of resource management, maximise destination competitiveness with an emphasis on sustainable aspects. It should also gather and distribute information to facilitate efficient allocation of tourism resources and integrate tourism supplies at a micro and macro level ensuring that the benefits are well distributed. They are observed to be effective in technologically advanced destinations such as smart cities.

Smart Tourism Destination

Smart tourism destinations shows that these tourism destinations use ICT to enhance the development and production of tourism processes (Wang, 2013). Buhalis and Amaranggana (2014) in paper "Smart tourism destinations" specified that in order to bring smartness into tourism destination it's important to interconnect the stakeholders through a common platform. Guo (2014), Wang (2013) and Zhu (2014) explained that the smart tourism destinations can be defined as the destinations utilising the available technological to co-create value, pleasure and experiences for the tourist. Therefore, smart tourism destinations need to constructively engage with local stakeholders to ensure community engagement. Smart tourism destinations are beneficial for the tourism industry as they facilitate information exchange between tourism organisations and tourists through a centralised platform. Smart Tourism Destinations could gain insights about customers' actual needs and preferences. Effective engagement among tourists and the service providers is important to provide products to meet the needs of the tourists successfully. This will ultimately assist the service providers to understand the needs of the tourists and provide innovative and improved services (Schaffers et al. 2011). Buhalis (2000) defined that smart tourism destinations are combination of tourism products and are initiated out of smart cities. Huang (2012) mentioned that the real meaning of smart tourism destinations is to focus and take care of the personal needs of the tourist by combining the ICT with casual culture. This ultimately enhances the service quality in destination and improves tourism management in the destination. Buhalis (2015) gave a model which shows that how a smart tourism can contribute to tourist experience.
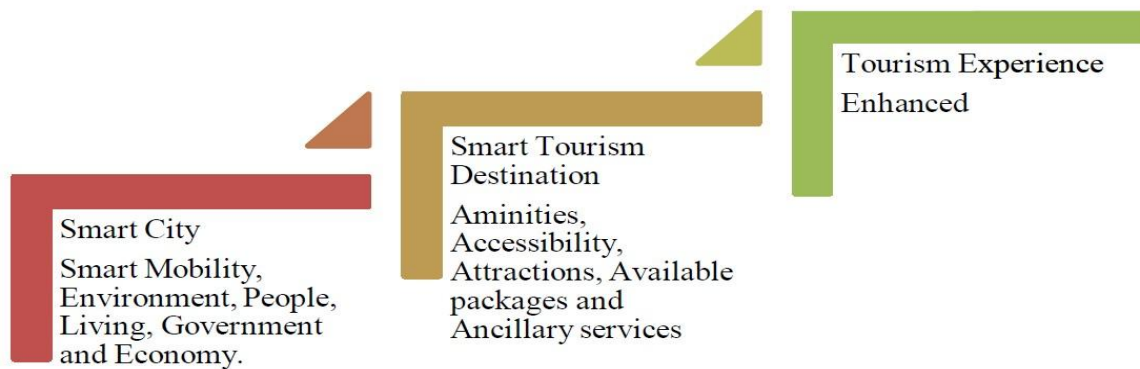
Figure: 1.1 Enhancing Tourism Experience Personalisation of Services

Source: Buhalis, D., & Amaranggana, A. (2015). Smart tourism destinations enhancing tourism experience through personalisation of services. In Information and communication technologies in tourism 2015 (pp. 377-389).

Ritchie and Crouch (2005) mentioned that both smart cities and smart tourism destinations can gain competitiveness by implementing innovative technologies in order to enhance its tourism experiences. According to Zygiaris (2013) in order to attain wide access to information, destinations need to provide unrestricted access to data to all citizens through a public-controlled platform. It is also necessary to acknowledge there are technologically illiterate people living within tourism destinations. Normally citizens and tourists are left on their own ability to learn and adapt according to the rapidly changing technology (Komninos, 2013). It is necessary that the destinations should focus on educating the citizens and tourists regarding how to efficiently utilise the new technology. Hence, it's clear that smart tourism destinations need to establish smartness by installing suitable tourism applications within the components smart cities (Cohen, 2012).

Study Area - Dharamshala

Dharamshala is a town in the upper reaches of Kangra Valley and is surrounded by dense coniferous forests consisting mainly of stately Deodar Cedar trees. The suburbs include McLeodganj, Bhagsunag, Dharamkot, Naddi, Forsythganj, Kotwali Bazar, Kachehri Adda, Dari, Ramnagar, Sidhpur and Sidhbari etc. Dharamshala has a rich historical background, having its importance since the time of reign of Katoch dynasty before the British Raj after which it was ruled by Britishers and then after the independence, establishment of Tibetan exile community. Before the British Raj in Dharamshala, the area was ruled by Katoch Dynasty of Kangra. The rulers were reduced to the status of jagirdars under the treaty of Jwalamukhi, signed between the Sansar Chand Katoch and Maharaja Ranjit Singh of Sikh Empire in 1810. In 1848, the area named as Dharamshala by British was based on an old Hindu rest house called Dharamsala.

Tourism Scenario

Dharamshala offers the magnificent view of thick Deodar and Cedar forests and majestic peaks of Dhauladhar Range. Dharamshala has come up as an important destination since the past few years due to adventure, leisure, religious and cultural tourism, etc**.**

- Bir Billing - World famous as para-gliding destination, about 65 km from Dharamshala.
- Lohardi and Chhota Bhangal – are two villages that are ironically gaining popularity for being completely unknown to tourists till now. Many trekkers stop at these places to enjoy pristine beauty of the region, surrounded by the magical white clouds.
- Kangra Fort- Located at a distance about 3 kilometers from Kangra Town offers a beautiful view of gushing streams of Banganga and Manjhi Rivers.

Tourist Inflow

Out of the total tourists coming to the district, approximately 50% - 60% tourists came to Dharamshala area. Tourist arrival growth rate has been fluctuated in the area during the past years. Highest domestic tourist inflow was seen in 2012 and foreign tourist in 2010. From the year 2014- 2018, rate of arrival of tourists has increased especially foreign tourists

Tea Tourism in Dharamshala

Dharamshala also has lush tea gardens which produce its popular Kangra tea. Traditionally known for Kangra green tea, Dharamshala now produces a variety of teas, including black, green, oolong and white teas, along with Kashmiri Kahwa and Masala Chai. Tea gardens at Mann Tea Estate are owned and operated by the Dharmsala Tea Company, which conducts guided tours of the tea gardens and factory, and offers tea tastings. Kangra green tea is considered to be amongst the best in India, and has also been found to contain among the highest anti-oxidant levels of all green teas produced in India

Physical Setting

Geographically Dharamshala is positioned 23˚13' North latitude and 76˚19' East longitude. The slope of the town varies from area to area. The upper part of the town is situated at an altitude of 2100 meter and the lower part of the town is situated at an elevation of 1250 meter.

Topography

Dharamshala consists of a compact land locked area and can be divided into two widely

dissimilar tracts – the lower Dharamshala and the upper Dharamshala. Lower Dharamshala is having administrative set up, markets, residential areas etc., whereas upper Dharamshala is situated at higher altitude also known as McLeodganj. There are no major rivers in Dharamshala therefore; Planning Area extracts water from various streams and waterfalls that come down from glaciers from nearby areas. Soil available in the area is fertile which is suitable for rice, wheat and tea. Dharamshala Planning Area is surrounded by Dhauladhar hills which are snowcapped almost throughout the year.

Figure: 1.2 Location Map of Dharamshala in Kangra District - Himachal Pradesh State


As of the 2011 India census, Dharamshala had a population of 30,764. Males constitute 55% of the population and females 45%. Dharamshala has an average literacy rate of 77%, higher than the national average of 74.04%.The male literacy is 80% and female literacy is 73%. In Dharamshala, 9% of the population is under 6 years of age.

Dharamshala has been selected as one of the hundred Indian cities to be developed as a smart city under PM Narendra Modi's flagship Smart Cities Mission. On 19 January 2017, Chief Minister Virbhadra Singh declared Dharamshala as the second capital of Himachal Pradesh state, making Himachal Pradesh the third state of India with two capitals after Jammu and Kashmir and Maharashtra

Source: Department of town and country plan: Government of Himachal Pradesh

Figure: 1.3 The Smart Tourism ecosystem
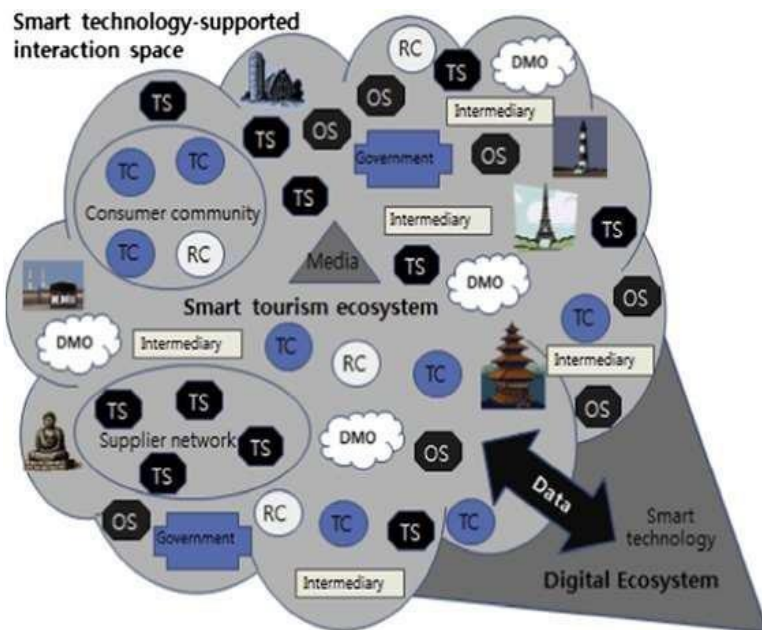
Gretzel et al present the working of Smart Tourism ecosystem and the various objects in it. The Tourist Consumers (TC) work closely with the Residential Consumers (RC) in order to act as a part of the local economy. Tourism Suppliers (TC) offer services to the tourists through technology and network. Other services (OC) like telecom operators; banks etc. also play a role in the system. They collaborate with each other and the TCs to provide best services to the tourists. Destination Marketing Organisations (DMO) performs marketing and information sharing through Internet and smart devices.

Source: Gretzel, Ulrike, Hannes Werthner, Chulmo Koo, and Carlos Lamsfus. "Conceptual Foundations for Understanding Smart Tourism Ecosystems." *Computers in Human Behavior* **50 (2015): 558-63**.

Importance of the Study

The Indian economy is growing and so must its tourism industry. The industry requires change, it needs to evolve. It must match that of the rest of the world as well as have a healthy competitiveness within the country itself.

Information and communication technologies (ICT) are what are going to enable this evolution. They offer greater flexibility with respect to the changing patterns of tourism and offer more attractive travel experiences to a greater range of tourists, each of whom are increasingly seeking even more personalised tours. Consumers expect relevant and high-quality information that at the same time is precise and easily accessible.

A Smart Tourist System would make choosing a place much easier than before and cancellation of plans will reduce. Also, an easy-to-use UI will mean even a layman can use it productively.

Objective of the Study

Research in the area of smart tourism remains very limited. It also largely focuses on the consumer-perspective and has adopted a very optimistic and uncritical stance. The following discussion points out several key research areas that have to be addressed in order to ensure the successful realisation of smart tourism goals**.**

Method of Research

This study is a "descriptive research" of the quantitative research methods in terms of its structure. The questionnaires are used to secure quarterly information on the characteristics of Indian and Foreign travellers to Dharamshala (Himachal Pradesh). These details include purpose of trip, size of travelling party, places visited, activities participated in during the trip, length of trip and trip spending. (Thomlison, 2001; Rubin & Bobbie, 2008: as cited in: Tripodi & Bender, 2010:120).

Data Collection Tool

The data regarding the participants were collected with the questionnaire technique. Since no data collection tool could be accessed directly examining the profile of smart tourism tourists in the literature, researchers examined various studies and developed a smart tourism tourist profile data collection tool.

Questionnaire Included the Following Items:

- ➢ Demographic characteristics and personal characteristics
- ➢ Holiday habits and behaviors
- ➢ Destination perception, satisfaction and loyalty
- ➢ Belief and tourism behavior interaction
  - ➢ Current Importance of New Platform Tourism Service

| Demo Graphic Profile Variable	Tourist Variable	Domestic %	International %	
Gender	Male	42.9	68	**Table: 2.1**
	Female	57.1	32	
Age	Under 30 years old	20.8	25.5	
	30-39 years old	31.6	20.6	
	40-49 years old	25.4	17.2	
	50-59 years old	12.2	18.0	
	60-69 years old	8.9	15.1	
	70 years old or more	1.1	3.6	
Professional Activity	Full time employed	32.1	27.1	
	Civil servant	22.4	12.4	
	Independent Professional	7.1	15.2	
	Full time employed	32.1	27.1	
	Civil servant	22.4	12.4	
	Part time employed	7.1	3.8	
	Student	6.8	17.3	
	Retired	6.6	12.2	
	Unemployed	6.3	1.6	
	Self-employed	5.6	5.8	
	Entrepreneur	4.4	3.6	
	House wife	1.6	1.0	
Level of Education	Primary	10.0	2.2	
	Secondary	28.2	11.4	
	University Graduated	51.7	45.3	
	University Post Graduated	10.1	41.1	
Income	More than $ 3,500	7.5	29.7	
	From $ 2,501 – 3,500	19.9	19.9	
	From $ 1,501 – 2,500	31.1	23.8	
	From $ 1001 – 1,500	27.5	12.2	
	From $ 700 – 1000	11.3	8.0	
	Less than $ 200	2.7	6.4	

Renowned for its natural scenic beauty, hill station, places of worship and world heritage architecture, Dharamshala (Himachala Pradesh) is visited by large number of international and domestic tourists every year. Table 2.1 shows classification of tourists visiting Dharamshala on the basis of Gender. This gender wise distribution of sample unit reveals that irrespective of nationality, the proportion of female tourist visiting Dharamshala exceeds the number of male tourists visiting. Tourist visiting

Dharamshala spans all ages from infants to greater than 70 years. The age wise profile of tourists visiting Dharamshala will help to understand which age group people visit Dharamshala, as age is also a factor which influences tourism. The age profile of tourists reveals that, the majority of the domestic and international tourists represent age group of Under 30 years old. This could be on account of the fact that this age group is physically active and flexible, they are no more dependent, and are having more time available for leisure and travel, drawing handsome pay packages and willingness to spend large amount of money on leisure and travel.

Education is an important indicator of the social as well economic status of the tourists. It is evident from the above table that, the sample base is predominantly with education status of graduate level followed by post graduate level. Occupation reveals the economic status of the tourists and also reflects the spending capacity of the tourists at the tourist destinations. This table indicates that 32.1% of the domestic tourists and 27.1% of the international tourists represent the full time employee. It is evident from the above table that, the occupation of sample units is largely from the full time employee followed by civil servants.

**Chart: 3.1 Purpose of the Visit**
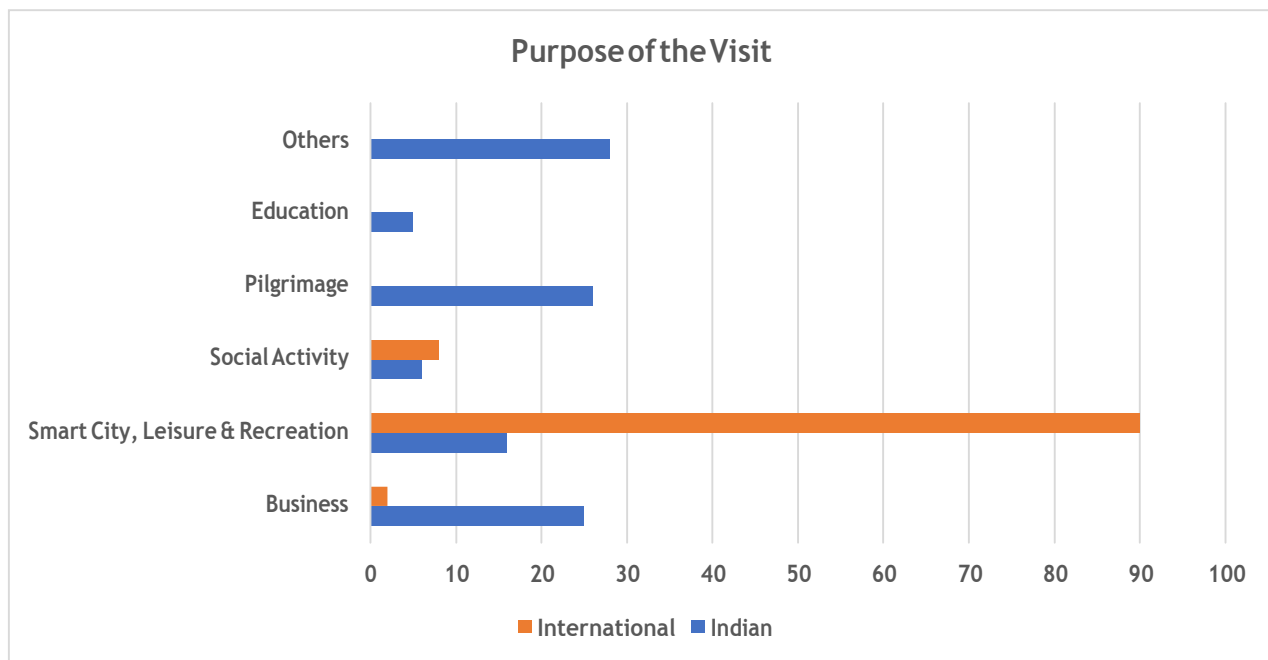
Source: Primary Data

The purpose of a tourist to travel to a particular destination may be due to varied reasons. As Dharamshala has been promoted essentially as a holiday destination, most tourists Dharamshala for its natural scenic beauty, hill station as well as for pilgrimage. Off late business and social motive also has gained prominence while Smart tourism is still being developing

The table clearly depicts that majority of tourists have come to Dharamshala for the smart tourism, leisure & recreation. The tourists who have come on account of other reasons have combined their visit with tourism activity.

**Chart: 3.2 Current Importance of Digital Platform Tourism Service**
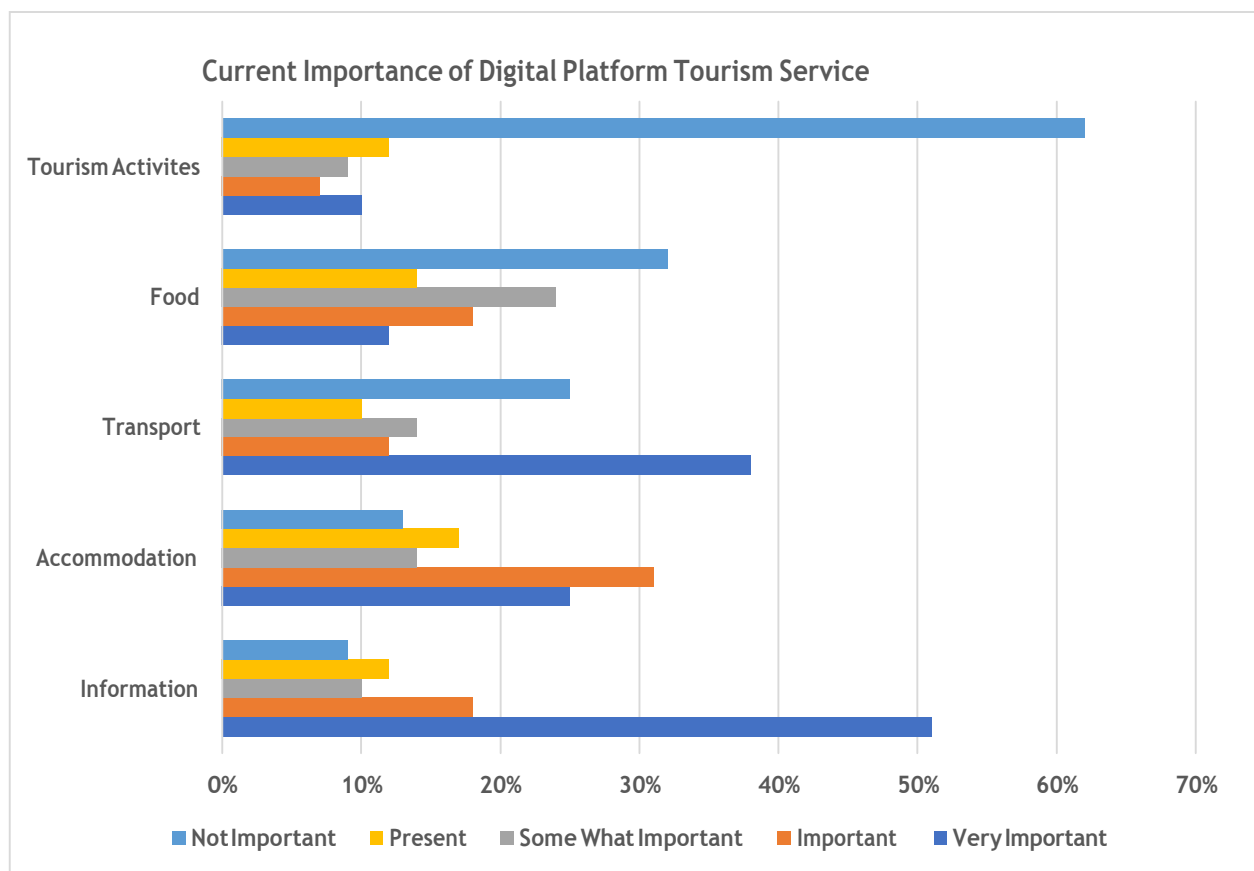
 Source: Primary Data

Digital Platform often referred to as 'sharing' or 'collaborative' economy, understood as sharing of access to goods and services from peer-to-peer/private-to-private coordinated through community-based online services. While initially transactions used to be B2B and B2C, a more recent trend is the entry of alternative suppliers through peer to peer (P2P) platforms, were private persons offer products and services to others through an intermediary platform run by an organisation or a company.

Such Digital Platform Tourism Service play an important role among the tourists visiting any destination in experiencing pleasure. The above table clearly depicts that, most of the domestic tourists and International tourist visiting Dharamshala are influenced by the references of digital platform tourism service.

Chart: 3.3 Importance of Areas of Governance

Source: Primary Data
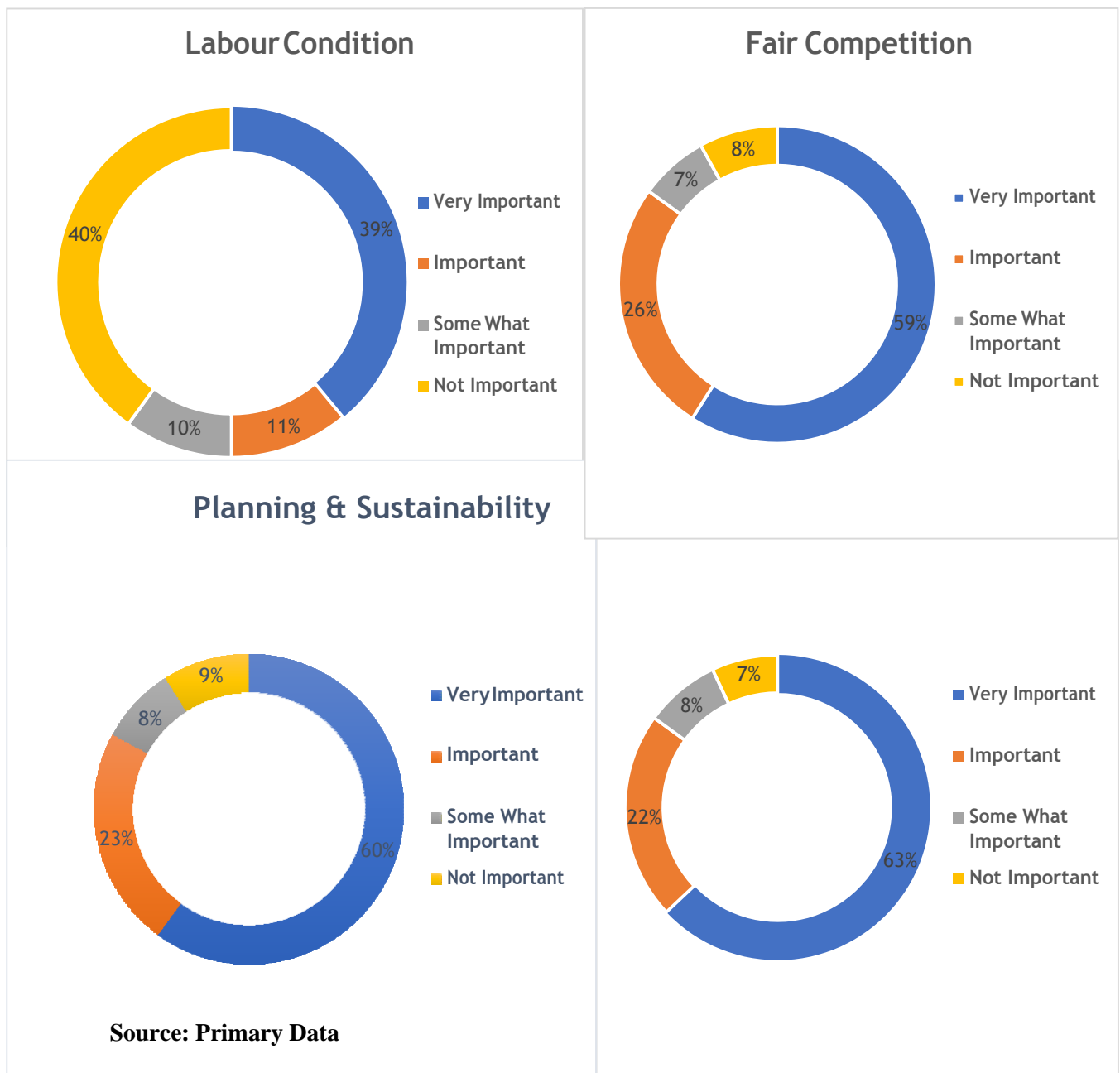
Intelligent automation will result in high-quality services and products with a lower environmental footprint and reduced costs. Powered by AI, the next wave of solutions will gather unprecedented amounts of data from disparate systems via the multiple touch points the travellers has with providers. Both the domestic and international tourist response that it is very importance to governance these four areas

Chart: 3.4 Impact of Private Tourism Service through Digital Platform

Impact of Private Tourism Service through Digital Platform
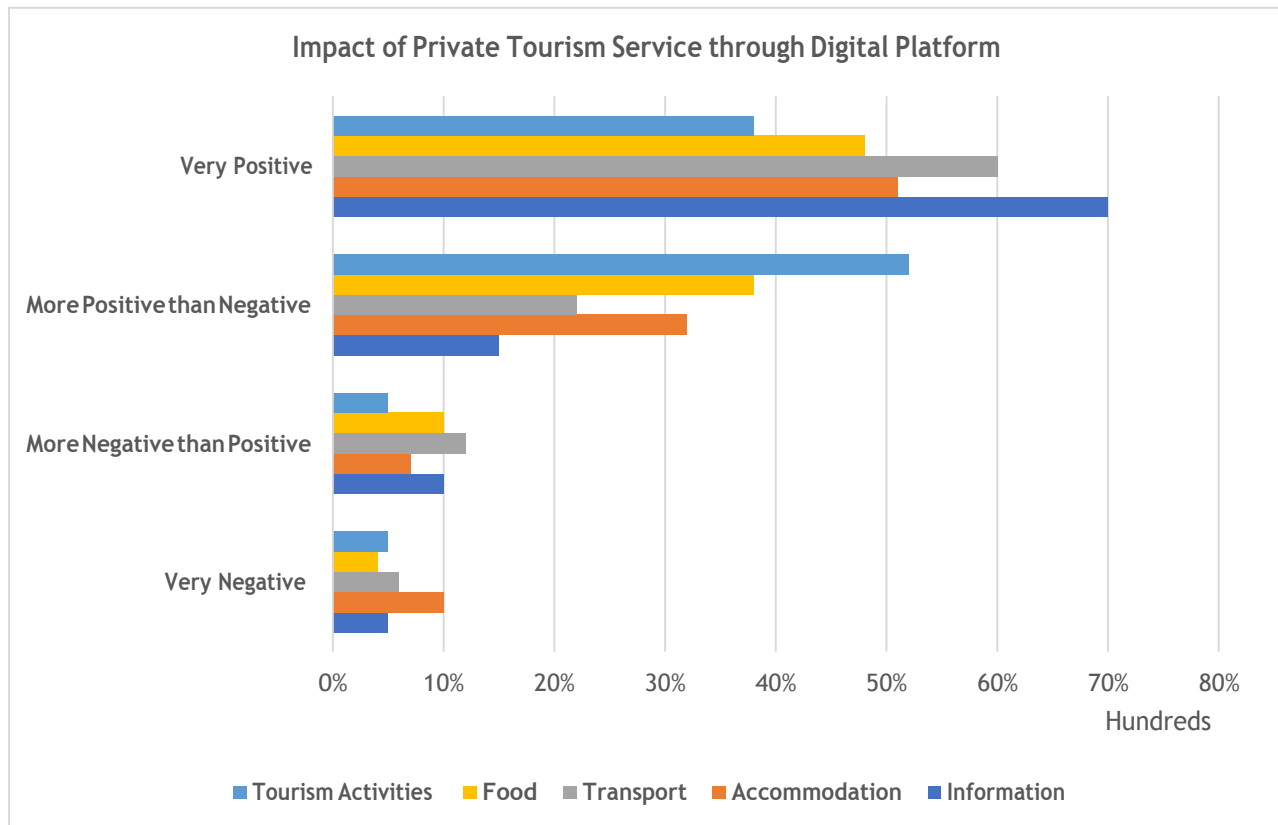
Source: Primary Data

One of the most recent trends in tourism has been the entry of private tourism services into the areas of information (such as Trip Advisor and Yelp), accommodation (Airbnb, Home Away or Couchsurfing), transport (Uber, Cabify or BlaBlaCar), food (Eat With, Feastly or VizEat) and 'things to do' (BeMyGuest,ToursByLocals or Vayable). Both domestic and international tourist show the impact of private tourism service through digital platform is very positive.

Finding and Suggestions

Public Wi-Fi

Offer free Wi-Fi in tourist places such as information offices, beaches, museums, etc. Enables the development of online marketing activities. It also allows the Administration

- Get mobility heat maps in real time
- Differentiate between new visitors and frequent visitors
- Know the average visit time according to the place or person
- Know the behavior of the public to prepare plans for self-protection against major events or implement mobility improvements

Through a captive portal can show offers to visitors or encourage them to download the tourist application of the destination, while collecting information about visitors to customise their experience.

Proximity Marketing

Through proximity marketing, the Administration can promote trade by launching marketing campaigns with offers and discounts that both citizens and tourists receive on their Smartphone.

The great advantage of proximity marketing is that it allows the public to be segmented according to its location, achieving greater effectiveness when impacting at the right time and fostering interest in the brand or the campaign.

Through small devices called "beacons" It can connect with visitors devices through Bluetooth technology to send promotional messages, thus helping them to know the most important points of the city, establish the most attractive routes, improve the experience during their stay or offer information about products, services and places. It is possible to deliver audio, video or image messages to attract visitors to facilities or establishments.

Detection & Counting of People

Through the use of public Wi-Fi and proximity marketing it is possible to determine the occupation of a certain place, the traceability of the route taken by tourists, their behavior at the destination, determine how much time is spent at the destination and which are the most transited.

Public Wi-Fi is well received by citizens and tourists, although in terms of analysis there is a certain margin of error, since there may be individuals who cannot be detected because they do not carry a mobile phone, for example children or elderly, or because they do not have the Wi-Fi option activated, or even if they carry more than one Smartphone (double counting).

The same happens with beacons because in this case, in order to recognise a device, individuals must take them with Bluetooth option activated. To correct these deviations, complementary technologies such as sensors can be deployed.

Digital Information Points

Digital panels or totems that can be placed both indoors (tourist offices, shopping centers, museums and cultural centers, etc.) and outdoors (at routes stop points, stations and public transport stops, etc.).

Its mission is to offer tourist information 24/7 to inspire visitors about tourism options, information is usually organised by topics (about time, events and cultural agenda, opening and closing times, real-time

information about transport public and municipal services, maps and points of interest, restaurants and places, etc.).

In addition, they can present additional functionalities such as incorporating NFC tags and QR codes for the translation of texts into multiple languages, or expand information on a point of interest, offer charging points for mobile devices by solar charging or even act as a Wi-Fi hotspot.

Sentiment Analysis & Tourism Flows

Capture, filter and analyse all the information about a tourist destination in real time, from multiple sources such as social networks, specialised portals such as Trip Advisor and Booking and credit card entities makes possible to know the tourist, his preferences, how much he spends in the destination and the time that remains in it.

Draw a complete profile of each visitor registering their behavior in each decision phase, from the inspirational moment of the trip, through the search and comparison of prices, to their reservation pattern, behavior and spending at the destination.

Indicators can be obtained

- Analysis of mentions by countries of origin and even disaggregated by regions within each country.
- Analysis of the main tourist attractions.
- Analysis of spending at destination through credit and debit cards disaggregated by origins and expenditure categories, being able to know for example which countries spend more in the destination, the average expenditure per visitor, or even how much German visitors spend on restoration.

In short, know what are the attributes, attractions and tourism products that are attracting more visitors to the destination during dierent times of the year.

The current tourist uses the web as the main source of information when it comes to inspiring and planning his trip, for this reason, it is important to have a web page or specific portal dedicated to tourism, where visitors of multiple nationalities can consult information before, during and after the trip in their own language.

Tourist Portal / App

The portal together with the mobile applications improve the experience of tourists and citizens by offering information in real time, so it is possible to configure tour packages according to the tastes or characteristics of the visitors, propose routes in the destination, offer information about the heritage, maps , audio guides, etc.

The public administration can conduct satisfaction surveys and allow users to leave comments in order to assess their level of satisfaction and detect points of improvement in the services offered, forming a bidirectional communication channel and at the same time make available the data managed by the Administration so that citizens, tourists and companies can reuse them

Smart Infrastructure and Smart Parking

Smart infrastructure is smart devices are incorporated into buildings. They can improve flexibility, reliability, and efficiency in infrastructure operation. Their added value is in reduced costs and manpower requirements, as well as the enhancement of safety. Apple has developed a smartphone application for managing the "connected" home. Such applications allow control over door locks from remote devices from any Internet connected source, as well as such things as adjusting a thermostat, controlling the supply of food in the refrigerator, and so on. They will have an important role in smart cities' mobility control (e.g., monitoring parking availability, traffic control). Industry 4.0 is based on mobile computing, cloud computing, and big data. The importance of cloud computing and mobile computing for Industry 4.0 lies in the provision of services, which can be accessed globally via the Internet. Services can easily be integrated and used [9]. Smart Parking systems obtain information about available parking spaces in a particular geographic area. This process is real-time to place vehicles at available positions. It involves real-time data collection using low-cost sensors and mobile-phone-enabled automated payment systems that allows people to reserve parking in advance

CONCLUSION

This paper attempted to provide definitional clarity and an overview of the basic assumptions underlying the smart tourism concept. It identified smart destinations, smart business ecosystems and smart experiences as the three basic components supported by layers of data creation, processing and exchange.

ICT is, undoubtedly, key to the conceptualisation as well as development of smart tourism. While the notion of smart tourism became popular only recently among academics and practitioners, ICT with the ability to support tourism in an intelligent way has been discussed, developed, and envisioned for quite a long time. Smart ICT is expected to be able to comprehend, to profit from experience, to acquire and retain knowledge, and to respond quickly and successfully to a new situation. Within a smart tourism setting, this kind of technology is the key component of information systems that promise to supply tourism consumers and service providers with more relevant information, better decision support, greater mobility, and, ultimately, more enjoyable tourism experiences. These smart systems include a wide range of technologies in direct support of tourism such as decision support systems and the more recent recommender systems, context-aware systems, autonomous agents searching and mining Web sources, ambient intelligence, as well as systems that create augmented realities.

With the focus on the travellers as the user of these systems, these systems aim to support travelers by:

1. Anticipating user needs based upon a variety of factors, and making recommendations with respect to the choice of context-specific consumption activities such as points of interest, dining and recreation.
2. Enhancing travelers on-site experiences by offering rich information, location-based and customised, interactive services.
3. Enabling travelers to share their travel experiences so that they help other travelers in their decision making process, revive and reinforce their travel experiences as well as construct their self-image and status on social networks. From the industry perspective, the emphasis is on the potential

contributions of these smart systems in terms of process automation, efficiency gains, new product development, and demand forecasting, crisis management, and value co-creation.

Although these systems can be characterised as heterogeneous, distributed, and sometimes even fragmented, the overarching goal of developing these systems should be open, scalable, and cooperative, enabling full autonomy of the respective participants of the industry as well as supporting the entire tourist experience and all business phases In smart tourism, technology is seen as an infrastructure, rather than as individual information systems, and encompasses a variety of smart computing technologies that integrate hardware, software, and network technologies to provide real-time awareness of the real world and advanced analytics to help people make more intelligent decisions about alternatives, as well as actions that will optimise business processes and business performances (Washburn et al. 2010) Today, the widespread use of mobile devices, especially of the smartphone and its numerous apps, signifies an era of unprecedented connectivity and ubiquitous access to the Internet 2012. Many technological developments that support mobile access, such as Cloud Computing and End-User Internet Service Systems are thus instrumental to facilitating smart tourism goals. (Wang and Xiang 2012)

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