

“Smart Tourism”: Growth for Tomorrow

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Abstract

Smart tourism is an upcoming and novel exhortation applied to portray the growing reliance of tourism destinations globally. The tourism industry and its consumers (tourists) are emerging forms of information and communications technology (ICT) that permit for substantial quota of information in the form of data to be modified into value propositions. Nevertheless, it remains vague concept, which hampers its theoretical development. The efforts in this study are put together for defining smart tourism, and the research sheds light on present trends in smart tourism, and then laying out its business and technological establishment. This is pursued by a concise dialogue on the scenario and limitations of smart tourism. The research further draws attention to the immense call for investigation to enlighten smart tourism management and development in present scenario.

Keywords: Innovation, near field communication (NFC), Radio-frequency identification (RFID), Smart business ecosystems, Smart technology, Smart tourism

I. INTRODUCTION

The increasing urban population worldwide has activated intricate challenges for cities across the globe. The word “Smart” has become a new buzzword to describe hi-tech, technological, social and economic developments fuelled by technologies that are dependents on unlock and vital data, sensors, alternate approaches of connectivity and exchange of knowledge and information, for instance the Internet of Things, Near field communication (NFC) and Radio-frequency identification (RFID), etc as well as potentiality to deduce and seek motivation. The idea conceptualized by Harrison et al., 2010 for smart as was exploiting functional real world data, near real time, sharing and integrating the data through adopting the multifarious analytical modeling, visualization and optimization to get improved functional commitments. Hojer and Wangel, 2015 argued which it is not so much the independent technological approach instead the synchronization, inter-linked and intensive use of diverse technologies that comprises smartness. The word has been supplemented to cities (smart cities) to depict the hardship targeted towards usage of the technology in innovative aspect to attain the resource more effectually, escalating and with fair authority, sustainability and quality life to the citizens. In regards to the association with the infrastructure (physical) for instance, smart factory or smart home, etc; the central idea is on dimming the lines between the digital and physical borders and on emphasizing the integration of technology. Additionally the technologies such as smart television, smart mobile phone, etc refers to the technologies underneath new forms of value proposition and alliance and lead the innovation.

When it comes for tourism and hospitality industry; the usage of smart is to express a multifarious blend of all of the above. The institutional backing is stupendous and in many cases even stress to realize smart tourism in present context. Asia in particular, has been concerted efforts towards driving the smart tourism agenda in the frontline. Various governments in many developing nations like India, South Korea and China are greatly funding concentrated on constructing the technological base which harnesses smart tourism (Hwang et al., 2015). In the west specially Europe; several of the smart tourism strategy took place out of the smart city/or particular area venture/project and as an outcome, the smart tourism terminus are progressively emerging more in the European tourism landscape. The concentration in the Europe, nevertheless, is more towards the development of smart consumers’ applications, competitiveness and innovation that supports the enhanced tourism experiences via prevailing data gathered and processed in a distinguish manner (Lamsfus et al. 2015; Boes et al. 2015). The governments globally be acquainted with is the transformative influence of smart technologies not only in regards with experiential and social facet but also in terms of economic potential.

Nevertheless in carrying out smart; has come up with a very fuzzy nebulous perception habitually linked to express specific agendas from political approach and also experiencing the sale of technological solutions. More often it is accurate from the smart tourism view point; where it is often practiced in connection of the open information initiatives or for rather trivial plans like encouraging the development of mobile applications or may be promoting the free wifi. Whereas these new approaches of information collection and management of sharing are more significant concrete step towards implementing the smart tourism, it does not serve the entire frame of what smart tourism circumscribe of. The lack of clear definition, unexpectedly everything is smart. From the tourism point of view, theory looks to be lingering behind several industry and governments headed projects. Academic task mainly is attentive on unfolding the fact in the mode of case-studies for instance, Boes et al. 2015; Bakici et al., 2013; Wang et al., 2013 or on debating inaccessible technological development for instance, Huang and Chen 2015; Boes et al., 2015, relatively on laying the theoretical base for its development and or assessment. Thus efforts through this paper is put

towards providing insights about present understanding of what smart tourism is and what it is not. Further, it outlines the investigation necessity to be met in regards to notify the development of smart tourism in future.

II. DEFINING SMART TOURISM

Tourism is a cultural, social and economic occurrence which entails the moment of people from countries or places out from their usual environment for business, individual or professional purposes (UNWTO, 2015). Provided the strength and information of tourism and the resulting elevated reliance on the data of information and communication technologies (Koo et al., 2015; Law et al., 2014; Benckendorff et al., 2014 Werthner and Klein 1999), it is not astonishing to observe the idea of smart being practiced to the phenomena that focuses tourism. In many a ways, the concept of smart tourism can be perceived as a logical evolution from the most modern concept of e-tourism to the traditional tourism in that the foundation for the innovations and the technological orientation of the tourists as well as industry were placed earlier with the wide acceptance of information and communication technologies in the tourism industry, for example, the incorporation of internet based technologies that leads to the materialization of e-tourism, the form of the worldwide distribution and central reservation systems (Buhalis 2003; Werthner and Ricci 2004). Bringing smartness into tourism destinations requires dynamically interconnecting stakeholders through a technological platform on which information relating to tourism activities could be exchange instantly.

The growing trajectory of this continued with the extensive espousal of social media (Sigala et al., 2012), and a shift in the line of realizing mobile tourism is recognized of the diverse mobility of tourism information and tourists (Buhalis and Law 2008; Wang et al., 2012). Nevertheless, the concept of smart tourism is undoubtedly a distinct step towards the progression of information and communications technology (ICT) in tourism sector in that the control and physical dimensions of the tourism are entering the digital platform field and new heights of intelligence are attained in the system (Gretzel 2011), the fabric of the segment (industry) is however amended and the approach in which consumers (tourists) experiences are consumed, created, exchanged and also shared which are basically diverse. As prescribe in the figure no: 1, Smart tourism complies of multiple layers and components that are foundation by ICTs. Parallel on one side it refers to smart destination, which are extraordinary results of smart cities, they apply smart city principles to rural and urban periphery and not only treats them to be residents but also consumers (tourists) in their efforts to hold the mobility, sustainability and quality of visits.

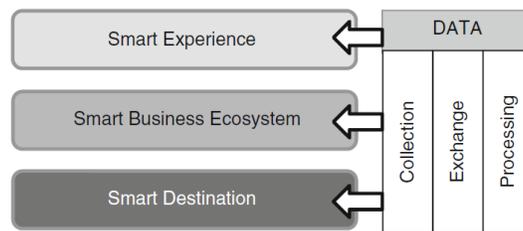


Fig. 1: Components and layers of smart tourism

The Smart Tourism Destinations (STD) concept appears through the growth of Smart Cities. With technology being rooted on all organizations and entities, destinations will exploit synergies between ubiquitous sensing technology and their social gears to hold up the enrichment of tourist experiences (Lopez de Avila., 2015). By applying smartness concept to address travelers' needs before, during and after their trip, destinations could increase their competitiveness level. The major aspect of smart destinations is the incorporation of ICTs into the infrastructure. For instance tourists interactive bus shelters that not only offers the timings and schedule of buses and touristic instruction but also provides USB ports for charging their electronic devices on the bay are being served at many countries to serve their visitors. Further, such countries provide bicycles throughout the city and tourists can verify their locations through smart mobile device applications, thus promoting environmentally friendly transportation around the city. Significantly all these efforts are results of heavy strategic investments to encourage innovation, sustainability and quality of life through enriching physical infrastructure with data among the context of specific destination. In total to sum-up a destination element, smart tourism is a social phenomenon arising from the addition of ICTs with the experience of tourism (Hunter et al., 2015). The key focus of smart experiences comprises of technology-mediated tourism experiences and their enrichment through personalization, concurrent-time and context awareness surveillance (Buhalis and Amaranggana., 2015). Further Neuhofer et al., 2015 argued that information aggregation, omnipresent connectedness and concurrent time harmonization as the major thrust of smart tourism experiences. The smart tourism experience is rich and efficient in meaning. Visitors are active vigorous participants in the creation of smart tourism by not only consuming the service but also create, annotate or otherwise enhance the information that constitutes the basis of the experiences for instance hastaging or uploading the pictures taken on social media etc.

A distinguish feature of this small business element is that it includes public-private collaboration to a degree that is bizarre and consequences from government becoming unwrap and technological-focused as servers of data and infrastructure. In support, smart tourism identifies that visitors can also offer values and can create and monitor (Buhalis and Amaranggana 2014) and thus take on entrepreneurial or domination roles. Significantly, smart tourism spans major three levels which support interconnectivity: and a smart processing level which is liable for the visualization, analysis, intelligent and integrated usage of the information (Tu and Liu 2014). Depending on these considerations, smart tourism is defined as tourism supported by

incorporated hard work at a destination to accumulate and harness the information resulting from the physical infrastructure governmental connections and social sources with the use of advanced technologies to transform the information into onsite experiences and business value-propositions with a comprehensive focus on sustainability, efficiency and experience fortification. Its key differences from e-tourism following the previous definition and description elaborate in following table no: 1.

Table – 1
Smart Tourism vs. e-Tourism

	<i>Smart Tourism</i>	<i>e-Tourism</i>
<i>Travel phase</i>	<i>During trip</i>	<i>Pre- & post-travel</i>
<i>Sphere</i>	<i>Bridging digital & physical</i>	<i>Digital</i>
<i>Fundamental technology</i>	<i>Sensors & smart-phones</i>	<i>Websites</i>
<i>Lifeblood</i>	<i>Big data</i>	<i>Information</i>
<i>Structure</i>	<i>Ecosystem</i>	<i>Value chain/intermediaries</i>

III. TECHNOLOGICAL FOUNDATIONS OF SMART TOURISM

ICT is indisputably approach towards conceptualization as well as development of smart tourism. While the concept of smart tourism became accepted only recently amongst the academicians and practitioners. ICT with the capacity of sustain tourism in an intelligent mode has been developed, discussed and envisioned for quite a longtime now (Gretzel. 2011). Smart ICT is likely to be able to realize to acquire and retain knowledge, to profit from the experience and to respond briskly and lucratively to a new situation (Rudas and Fodor 2008). Within a smart tourism settings, the kind of the technology is the key element of information system which assures to serve visitors and the service providers with more appropriate data, greater mobility, better decision and most importantly it provides more enjoyable visitors experiences (Sigala and Chalkiti 2014; Gretzel 2011; Werthner 2003). These smart system comprises an ample range of technologies in straight hold of tourism such as decision support system and the more recent recommender system, context-aware systems etc (Venturini and Ricci 2006; Lamsfus et al., 2014; Fesenmaier et al. 2006). Further by enabling visitors to share their travel experience so that they aid the potential visitors in their decision making process as well as build their self-image and status on social network platform (Washburn et al., 2010). From the industry point of view the emphasis is on the possible assistance of these smart system in terms of process automation, new product development, crisis management, value co-creation and demand forecasting (Yoo et al. 2015; Werthner 2003; Sigala 2012a and b; Wober 2003). Nevertheless these approaches can be identified as heterogeneous and many times even fragmented(Wang and Xiang 2012); the overarching targets of nurturing these systems should be scalable, open and cooperative, enabling full self-sufficiency of the relevant participants of the industry as well as underneath the complete visitors experience and all business phases (Staab and Werthner 2002).

As depicted in the table no: 1, harnessing the digital sphere with the physical world is a key concern for the development of smart tourism. The rising use of iBeacon technology ensures in tourism sector that initial stage in this route in that it authorized mobile phones to respond to the signals from the physical world in order to sustain ambient context reorganization. Nevertheless, in due course realizing the Internet of Things (IoT) will be important for producing the preferred persistent, smart tourism environment that focuses affiliated digital and physical infrastructures. The remaining fundamentally idea at this point, the IoT has the capacity to briskly become a new realism as a technological infrastructure (Atzori et el, 2010). It has been recognized as a significant base for the services to be served by smart tourism cities (Perera et al., 2014; Guo et al., 2014). The key thought of the IoT is the persistent existence around of a diversity of object like sensors, smart phones RFID technology and so on, this are competent to relate among each other (Want et al., 2015). These technologies are related to the IoT and thus harness the space amongst the digital realm and real world in present course of time (Miorandi et al., 2012).. Therefore the IoT empowers the development of different stage to broadcast an ample range and diverse data types of information using participatory sensing systems (Gutierrez, et al. 2013).

IV. BUSINESS FOUNDATIONS OF SMART TOURISM

The ICT applications and tools have permitted tourism enterprises to develop into smarter in which aspect to raise their competitiveness and performance through automating, transforming and updating their firms process and functions like human resources management, marketing, logistic management and visitors services and management (Sigala and Marinidis 2012). Nevertheless, the firms’ impact on ICT is restricted to exclusively purposeful effects. ICT also plays a significant role in driving structural and institutional market changes in the tourism trade. To sustain the conventional tourism organizations have to refine their firm’s model and the way they recommend to make value for the visitors. Certainly, various definitions of a business model meet to identify the architecture and draw the value creation, capture and serve the mechanisms (Teece, 2010). By identifying new organizational market, business models, (Storbacka and Nenonen 2011; Callon and Muniesa 2005; Inversini and Masiero 2014; Pollock and Williams 2009; MacKenzie and Millo 2003), smart tourism as shifting all or few of the market basics such as market practices, market construction, market actors, exchange object and market institutions (Sigala, 2015). Operating in vast information driven smart setting affects all the 9 fundamentals of organizational models in primary way (Morabito 2015), visitors’ relationships, visitors segments, value propositions, revenue streams, key participants, key resources, cost structure, channels and key activities. Majority of smart tourism initiatives are presently in the maturity and profoundly subsidized by

government. Certainly, as new dominating models for visitors services in smart cities have been served in the theoretical and literature enterprise development models appropriate for smart tourism deficient. Further Morabito, 2015 argues that suggesting smart tourism might intensely argue the way one thinks about business models and their significant approach.

Research literature in the service-dominant-logic (SDL), service science and open innovation domain serves the theoretical underpinnings for management approaches that organizational can opt to rectify, exploit and address the challenges, affordances and opportunities of smart tourism and to redefine their sustain competitiveness and organizational models (Schmidt_Rauch and Schwabe 2014). Open innovation depends on the hypothesis that the firms cannot depends on its own, however it has to employ with associates in regards to innovate (West and Gallagher 2006; Dahlander and Gann 2010). To conclude, tourism organizations have to work together with the stakeholders afar their organizational periphery in regards to the exchange of sources and for value co-creation. According Anttiroiko et al., 2014 the value co-creation, SDL and service science takes place in larger service ecosystem. Nevertheless Vargo and Lusch 2014 believes that the execution of the ecosystem is experienced as a key requirement for enabling the co-creation of the visitors experiences a less is known about how the organizations can create and constantly direct such service ecosystems. This corresponds to Buhalis and Amaranggana's, 2014 belief of vigorously unified smart tourism stakeholders and Van Heck and Vervest's, 2007 description of smart business networks that permit for plug and play scenarios to grab rising value creation opportunities.

Internet tools and social media are the instrumental in allowing the organizational development through such technologies that enables them to group with others and to flawlessly exchange to resources. Schmidt Rauch and Schwabe 2014, believed that the significance of mobile technology for co-creation in the smart tourism ecosystem, offering that it opens the channels for communication and permits for a mutual representation of the way out space in situation. Further in the smart ecosystem, any stakeholder is a key role player targeting to exchange and interact the resources with the other actor for value co-creation (Yoo et al., 2015). For example the roles and labels given to the players like organizations, visitors and mediators are not legitimate any longer Vargo and Lusch 2008. Particularly in smart tourism the service ecosystem stakeholders can be a consumer, producer or may be mediator etc, depending on the resources and associations rather than pre-defined roles, this results as producer-consumers associations have to be re-defined and new aspects to cooperate in delivery, producing and also consumption of the service have to be developed (Anttiroiko et al. 2014; Gretzel et al. 2015). The research encompasses the need of the tourism organizations to opt the open data system and business models, as it allows them to deal with their smart tourism ecosystem in a dynamic approach and helps plugging and playing. Parallel to this the concept of smart tourism can head to the new data asymmetries which can be commercially used (Tachizawa et al. 2015). The smart service ecosystems needs new affiliations to share knowledge, risk and expand value chains and that they comprises an setting in which there is a vast competitive stress to be innovative and cost-effective (Anttiroiko et al., 2014).

V. DISCUSSION AND IMPLICATIONS FOR RESEARCH

The study domain in smart tourism relics partial and moreover serves case studies of already prevailing initiatives. Nevertheless it is more incline towards the visitors' view point and has adopted a vast uncritical and optimistic attitude. The following arguments showcases many important research domain that have to be addressed in regards to make sure the successful realization of smart tourism targets. The information depends at the core of all activities performed in smart tourism. Moreover, the necessity for the data is so great that the visitors might be simply influenced to give up privacy (Anuar and Gretzel 2011). The digital footstep of a smart visitors is vast and opportunity for digging the digital evidence, although travelling for business or leisure. Andrejevic and Burdon 2015, argues that the smart tourism is popularizing as a major contributor and benefactor of the sensor society, and this is identified by omnipresent and always on-information capture. Through it comes concern of being able to rectify personal out or vast collections of apparently unidentified information, automatic detainment of information for no concrete reason and observation under the disguise of service provision. The smart tourism inflates major issues with the respect to data control and properly deriving the value of the data (Tallon, 2013). The present assumption is that all the data is enormously significant to the business and will be freely served by the visitors' who seeks enhanced visitors' experiences.

Further the challenge is the escalating debate in regards to the smart tourism is the tremendous dependence on the technological aspect. This has a clear consequence in concern to a broadening digital divide for those visitors not using the smart phones or gadgets and destinations are not in situation to afford such in their infrastructure (Minghetti and Buhalis 2010). But the challenges are not only affordability or access, the gadgets like smart watch recommend that the visitors are not only unwillingly adopting this kind of wearable technology (Forbes, 2015). Further, when examined, this ICT dependence discloses other challenges like data overload, lack of serendipity that is often necessary to meaningful tourism experiences, and mounting aspiration to at least run away technology when on vacation (Gretzel 2010). Whereas the study is already being managed on how tourism experiences are being enriched by the usage of technology, there is an obvious lack of research on more psychological data, smart tourism, health issues, risk of regular attack with the data by context aware system and insight pertaining the visitors attitudes pertaining the distinguished aspects of smart tourism, including the motivational factor to co create and their enjoyment of such process and actual facets of value in use derived by the visitors. The need to unlock the supremacy of vast information for translation into smart tourism services also lifts the artificial and human needs to do so. Hjalager 2002 argues that the tourism is presently not the sector that magnetizes many knowledge workers; also it fights with lack of innovation regardless of its tough reliance on ICT. Thus more investigation from organizational and management point of view has to be studied and has to empirically and conceptually investigate into economics of smart tourism concern. Werthner et al., 2015 have in recent times

published a study manifesto that outlines the many layers on which tourism and ICT related research needs to create considerable assistance.

Considering human-computer interface aspects to market structures, social dynamics and industry value chains to informing governance and policy, smart tourism associated study has to plug lots of gaps to be able to vitally inform smart tourism initiatives. The study in regards with the design science is further required to investigate the new value creation opportunity supplied by the smart tourism and convert them into working ICTs. The key traits of the raising smart tourism economy like Uber, i-watch etc are dependent on straightforward hi-tech platforms that seize the benefits of technologies which are existing to exploit a distinguish market niche. It also becomes obvious that the advances in the defined technologies and imitate intellect are required to exploit mixture of information layers. While sustainability is a key concern, the fact of the costs of smart tourism for instance e-waste, energy utilization, etc have to be projected. And lastly, whether the idea of smart tourism is actually having better experience has yet to be investigated empirically. The following table no: 2 concludes the key study areas rectified.

Table – 2

Smart tourism research agenda

Sr.No	Smart Tourism Aspect	Research Topics
1	Service Provision	Appropriate business models
		Value of information
		Gullible technology-market combinations
2	Consumption	Need/desire for escape from technology
		Technology access
		Physiological consequences of ubiquitous connectivity
3	Facilitation	Information supremacy
		Social and environmental price tag
		Non-natural intelligence

VI. CONCLUSION

This present investigation is an effort towards providing definitional clearness and an impression of the basic assumption underlying the smart tourism idea. It recognizes smart business ecosystem, smart experience, and smart destination as the three key elements supported by the edge of data exchange, creation and processing. In doing so it recognized smart tourism as diverse from traditional e-tourism not only in foundation technologies of which it gains the benefits but also in the commencement of designing enriched destination experience for the visitors. The study underlined the tough theoretical and practical foundation in the smart city in connection to conceptualizations and the concluding attention on public service models at the cost of systematic and wide-ranging investigation of its business implications and opportunities. It also exposes inadequacy of literature that examines smart tourism presumption and doubts, also positive, societal and experimental impacts.

This study proposed an investigating outline, which is far from being comprehensive, relatively sought to focusing the present most unnoticed space in understanding the prospective of smart tourism and its likely drawbacks. The development of the smart tourism is by now underway, in many aspects it naturally develops from the wide uptake of technology in tourism sector. Nevertheless, the extensive and systematic synchronization and division as well as exploitation visitors' information for worth construction is still in its infancy. Viable smart tourism ecosystems are efforts at global platform, but the intricacy of the sector drives it enormously tough to go beyond very specific technological platform for innovation. However, the technological thrust in the path of smart tourism is wide and it is probably that the tourism will serve the backdrop for developing many of such kind of smart innovations.

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