Review Article

Suneel Kumar, and Shekhar*

Technology and innovation: Changing concept of rural tourism – A systematic review

<https://doi.org/10.1515/geo-2020-0183>

received January 31, 2020; accepted July 04, 2020

Abstract: This study aims to carry out a systematic review of the literature on the impact of technology in the tourism industry and its application in rural tourism research to serve the objective of socio-economic development. Research articles were selected from journals indexed in Scopus, Web of Science, or those that are listed in the Australian Business Deans Council or University Grants Commission – Consortium for Academic & Research Ethics list. This study provides a summarized conclusion of research trends undergoing rural tourism area while simultaneously highlighting the themes and areas that could be addressed through the tourism industry. This study tries to establish a link between the use of technology and the development of the rural tourism industry. Also, it concludes that the use of technology has evolved the way that rural tourism could be conducted. Furthermore, it has opened up ways to use rural tourism as a means to solve existing socio-economic challenges in society. This study is new and it certainly adds to the value of researchers and academicians working in this domain by providing them with research areas that require a thought to ponder upon.

Keywords: rural tourism, technology, length of stay, niche tourism

1 Introduction

Rural tourism is a well-researched theme, which includes a series of literature concerning conceptualization, importance, limitations, and interferences in its

expansion worldwide. There is a shift in the orientation of policymakers concerning tourism [1]. Once considered a leisure activity for the middle or wealthy class, tourism has evolved into a tool for economic development [2,3]. There exists a relationship between industrial development and rural socio-economic development [4]. Rural tourism provides an alternative to mainstream development through the manufacturing sector [5]. It can assist a nation to lift itself outside poverty. It is essential to understand the different emerging trends in tourism industry research and their applicability in the rural tourism industry. Thus, much of the research in this area is inclined toward the development of rural tourism as a product [6]. Due to the scarcity of resources, there always has been a trade-off on expediting tourism products and related research. Technology is considered to be one such tool [7,8]. Although technology is being used in the tourism industry, its application is limited to its marketing. Furthermore, there is a lack of information concerning the best use of technology in the rural tourism industry. This study presents a confluence of technology and rural tourism. The best way to implement technology in rural tourism is in a way that results in a gain for every stakeholder, ranging from rural counterparts to the user, in the tourism industry.

However, the development also has its cost. Rural tourism is not aloof of its externalities [9]. The concern over its sustainability is considered as a significant issue [10]. The development of rural tourism has a concern about its possible contamination or loss of the local culture. The primary concern regarding the development of rural tourism has been, on the one hand, to increase its popularity, and on the other hand, prevent it from turning into a mass-tourism industry. The tourism industry has become a topic of discussion at various international and national level forums. Thus, it is essential to understand the different emerging trends in tourism industry research and their applicability in the rural tourism industry. Also, tourism has never been taken as an industry to tackle socio-economic issues in society. Given the gaps mentioned earlier, this study focuses on infusing technology in conducting and

* **Corresponding author: Shekhar**, Research Assistant, Department of Commerce, Shaheed Bhagat Singh College, New Delhi, India, e-mail: Shekhar0481.sa@gmail.com

Suneel Kumar: Department of Commerce, Shaheed Bhagat Singh College, University of Delhi, New Delhi, India

practicing rural tourism to promote rural development. Through this study, a few unexplored areas have been identified, which could significantly transform the rural landscape in India.

For an in-depth analysis of the trends, a systematic review of literature has been carried out. Review of the relevant literature is one way to not only have a better understanding of the concept but also to know about the themes and patterns of studies that have been conducted around the topic. It is also essential to know that research works done and their research gap.

1.1 Data source

To carry out an extensive literature review, this section has been divided into the following subsections:

- Rural Tourism and Sustainable Rural Tourism
- Tourism and Technology

Each segment explores the different papers that have been published in esteemed national and international journals. Sources for collection of research paper and articles:

- Journals covered in Australian Business Deans Council list
- Scopus indexed journals
- Web of Science indexed journals
- University Grants Commission – Consortium for Academic & Research Ethics listed journals
- Peer-reviewed journals

1.2 Data tools and techniques

The research papers in both categories were passed through the Nvivo software to conduct a word count frequency analysis to show the underlying themes and trends of the paper. Top 100 words from the papers in each category were identified to serve the purpose. A weighted percentage of each word is calculated and words with the highest percentages are selected thereon. The weighted percentage is calculated as the total appearance of each word in all the papers addressed divided by the total of all the words appearing in the paper. Common words having a high percentage are ignored and words that represent the theme of the papers are then selected. Each segment provides an in-depth analysis of work that has been done, identifies significant thematic areas and sub-themes, and lists out the major conclusion drawn from the studies. At the end

of each segment, a conclusion is drawn based upon the significant research gap that persists in the area and also highlights a need to bridge the research gap. After completing an in-depth analysis of every segment, a holistic overview of the literature review is presented highlighting the need for this study and how this study overcomes the research gap that is existent in contemporary and previous studies.

2 Results and discussion

2.1 Rural tourism papers

Rural tourism is broadly defined as a tourism activity that takes place in a rural area. However, authors have time and again raised doubt on precisely what constitutes a rural area. Several common characteristics that exist in the rural areas as per literature include agriculture being the prominent source of income, low level of population density, and the presence of authentic culture and social habits in the area.

2.1.1 Importance of rural tourism

Lone [11] studied the role of agriculture in rural development and the role of diversification to develop the agriculture sector itself. Indolia and Prasoon [12] presented different schemes of the department of rural development, state governments, and other concerned departments of the government of India. Singh and Bhowmick [13] conceptualized innovation in the tourism industry in rural India. The main objective of the study was to enumerate the variables of rural innovation and to identify the factors of rural innovation by analyzing empirical data. Bhatia and Kiran [14] attempted to identify the different ways through which e-governance schemes and activities of the government have led to the rural development of India. This study concluded that Electronic government (e-Government) is one of the most critical ways to bridge the digital divide in developing nations like India. Samanta [15] analyzed some past trends and present practices related to rural transport in India and investigated the impact of rural road infrastructure development on socio-economic conditions of the rural population including the overall contribution to the nation. Reddy et al. [16] stated that rural tourism has a positive direct impact on rural development.

Development of entrepreneurial attitude, setting up of micro, small and medium enterprises, development of infrastructure will all lead to the development of the rural region. This is also visible in the studies that are conducted under the domain of rural development. Garjola and Singh [17] analyzed the problems in villages and the nondeveloped things in villages to resolve all the major and minor problems of the rural area and suggested that increasing populations is the major hindrance for the rural development. To control the growth rate of the population, the government must inform rural people about family planning policies and practices. Vanitha and Vezhaventhan [18] analyzed the development of rural areas and the implementation of policies in rural areas and suggested that for further rural development, the government should improve the Internet connection facilities in rural areas, so that the necessary promotion of schemes could be undertaken.

The literature highlights that rural development has several potential offers for the economic and social development of the region. Now, to develop a rural area, specific measures are required to be undertaken that provide an opportunity for the setting of a business, development of infrastructure, use of technology in operation, etc. Rural tourism serves all the above-mentioned purposes in the following ways:

- Provides employment opportunity – rural areas are characterized by low employment providing regions. The key characteristic of such regions is that there is a very minimal scope of employment opportunities in such areas. Since employment has been troubling the government for the last few years, rural tourism could prove to be an opportunity for overcoming the gap in employment avenues. Government schemes such as a scheme for Promotion of Innovation, Rural Industry and Entrepreneurship, Scheme for Skill Strengthening for Industrial Value Enhancement are some of the schemes and initiatives which if applied to the rural tourism industry could result in beneficial outputs.
- Provides alternative sources of income – Rural people are majorly dependent on farming and nonfarming activities for their livelihood. Rural tourism, therefore, could prove to be an alternative for livelihood sources. Government scheme of Skill acquisition and Knowledge Awareness for Livelihood promotion aims at increasing the earning capacity of people could be used for imparting required knowledge to the stakeholders.
- Balanced regional economic development – Development of rural tourism could be a stepping stone for the regions that lack resources to develop themselves economically

and socially. Since development through the manufacturing sector is not possible in the absence of resources like raw materials, rural tourism can be used as an alternate industry to develop rural regions.

- Means for social inclusion – Rural tourism can also be used as a mechanism for making people aware of the local customs and traditions of a place. Alternatively, it can also be used as a mechanism to teach locals about the lifestyle of the population at large living outside their habitual zone. People from the urban background who are unaware of the diverse culture by visiting rural regions will get to experience the culture in fairs and exhibitions. Learning by experiencing will be much more fruitful in promoting social inclusion.
- Means to remove social evils – Rural tourism can also be used as a means to overcome social evils existing in a society. An observation by a respondent in our study talks about how rural tourism can be used as a means to give relief to children in an orphanage and elderly people residing in old-age homes who long for affection of their near and dear ones.
- Shift burden from exhausting destinations – Several tourism destinations around India have become exhausted, and the natural resources at their dispersal have depleted to a considerable extent. Therefore, rural tourism development could provide an opportunity to divert the flow of tourists to destinations with less footfall and great resources, so that exhausting destinations could get time to replenish.

2.1.2 Trends in rural tourism research

Rural tourism research in India and around the world has witnessed high growth over the last decade or so. Of much relevant literature exists on the concept of rural tourism and related avenues. An analysis of word count conducted using the Nvivo software on 50 research papers on rural tourism highlights that significant themes and patterns around which the literature related to rural tourism revolves is conceptualization, different types of niche tourism (rural tourism, dark tourism, community tourism, wine tourism, and heritage tourism), marketing of rural tourism and economic importance of rural tourism. Table 1 lists down themes extracted from the research papers.

Figure 1 is a diagrammatic representation of the top 100 words identified from the literature available on the rural tourism in Indian or global context.

A significant portion of literature revolves around the importance and conceptualization of rural tourism.

segmentation of rural tourism in the Canary Islands. Although the author finds a large heterogeneous and unrelated market segment, they postulate environmental attitude as one factor having a more significant economic influence and tourist satisfaction. Kachniewska [45] explicitly sneaks into the role of rural tourism in the development of overall quality of life. A detailed research design accompanied by qualitative and quantitative research techniques was adopted to ascertain the influence. It was found that planning had a crucial role in formulating the perception of rural tourism. The study identified other factors playing a significant role in influencing tourism such as social and technical infrastructure, ecology, and lifestyle. Orsolya [46] in his study attempted to track the changes in the field of rural tourism research by analyzing papers published in international tourism journals over the past 15 years. This study helps identify the themes and patterns associated with rural tourism research going across the world and also helps in identifying the areas that are yet to be answered. Pagdhare [47] studied the scope of development of sustainable rural tourism in Maharashtra, a state located in India, such as unspoiled beaches, monuments, artifacts, a rich tradition of fairs and festivals; therefore, there is a scope for the development of rural tourism in the state. Singh et al. [48] pointed needs, scope, and challenges of rural tourism in case of India where a majority of people still resides in rural areas and engage in the traditional way of living, rural tourism can not only act as an alternative to their existing income portfolio but can certainly enhance the vitality of rural areas by preventing migration and preserving the rural touch. Farmaki [49] examined tourist experience about the activities performed and travel motives while visiting a rural destination. Exploratory research design supported the study and concluded that rural tourism experiences are widely dispersed, shaped by service provisioning, tourist's travel motives, and regional characteristics. Kapur [50] through case study techniques highlighted the possibilities of the development of rural tourism at different places in India. The study suggested several promotional techniques that would be suitable for rural tourism and also highlighted the hindrances in implementing them. Singh et al. [48] emphasized on understanding the concept of the rural setting, social-ecological environment, local sentiments, and values attached to rural places before the development of rural tourism and highlighted the need, scope, and importance of marketing strategy for rural tourism. Wang and Lalrinawma [51] explored the meaning of rural tourism

and its associated terms through a myriad of definitions and concluded that timely and accurate planning with information dispersal, proper planning with controlling, and effective implementation of policies is a must for sustainable development of rural tourism. Gabor [52] did a content analysis of researches undertaken under the rural tourism umbrella from 12 known international journals. Research cited the possible research areas that demand the attention of researchers. Chin et al. [53] recognized the increasing foothold of rural tourism and increased competition in the area, and the study investigated the role of services in the development of competitiveness. Osti and Cicero [54] scrutinize the perception of tourists to a multitude of landscapes by grouping tourists as per their sensitivity towards specific landscape characteristics. Based on findings on the quantitative analysis of the responses collected through structured questionnaires and employed A–K mean cluster analysis to group tourists. Xue and Kerstetter [55] examined the transition of rural citizens from being solely dependent on agriculture as a means of livelihood to the adaptation of rural tourism providers. The results discussed that adaptation is a continuous process involving negotiation, adjustment, and engagements. Masood and Nguyen [31] studied the development of homestays in Uttarakhand, a state of India, and the willingness of local people to allow the development of the concept of homestays. The study concluded that tourism had not brought much anticipated economic benefits to the natives since they have little participation in tourism development. Therefore, the study recommends incorporating the view of locals in policymaking. Sanagustin-Fons et al. [56] studied the social perception about rural tourism impact in the Cinco Villas region (Aragon, Spain), analyzing its evolution and effect on the territory.

2.1.3 How to make rural tourism sustainable?

A significant question that arises while developing rural tourism is that on the one hand, one talks of over-tourism at certain places and on the other hand talks about sustainability. So, much research has been conducted on how to make rural tourism sustainable. Sustainable tourism has been defined as an approach to undertake tourism activities while respecting the needs of current other stakeholders as well as a need for future tourists and other stakeholders, without compromising on the satisfaction of current tourists at large. Sustainable rural tourism, therefore, can be understood

as rural tourism that is undertaken without overburdening the rural tourism destinations in terms of resource usage as well as without causing loss of satisfaction of current rural tourists. The most common sustainability practice followed in tourism is restricting the number of tourists at a destination. This approach is however criticized for being antistakeholders. Therefore, industry has tried to adopt various other practices to incorporate sustainability in tourism. One approach is to increase the average length of tourist stay, irrespective of tourist typology. Moreover, other is developing different avenues of tourism such as a niche tourism product. The following section talks about the different ways tourism can be made sustainable.

2.1.4 Increasing the average length of tourist stay

One way to make tourism sustainable is to increase the average length of tourist stay. Wurst [57] examined out the complexity in the calculation of the length of stay of tourists and suggested counting the tourist turnover as an effective strategy to determine the length of stay of tourists accurately. The study also recommended that the researchers must apply due diligence in handling such a large amount of data. Menezes et al. [58] examined determinants of length of stay of tourists in the Azores, Portugal. The researchers studied several sociodemographic factors and trip attributes such as repeated visitation, type of flight, and concluded a strong relationship among them. It was found out that marketing strategies that focused on cultural stay harmed the length of stay, where strategies that focused on nature, remoteness, and landscape positively influenced length of stay. Barros and Machado [59] found out that sociodemographic factors explained the length of stay of the tourist. The characteristics of the destination helped in moderating the length of stay. The study discussed various measures related to age, nationality, education, and budget and expenditure that could be adopted to increase the length of stay of tourists. Thrane [60] states that tourist length of stay is a significant factor for policymakers as it impacts the total expenditure tourists make. The study analyzes the impact between nationality and other variables and the length of tourists stay using the econometric approach. The study presents the relationship between age, spending patterns, nationality, and an average length of stay among international tourists. The study also presented implications for researchers and policymakers. Alejziak [61] attempted to identify the impact of the strength of

factors that increases the people to refrain from engaging in tourism. The study identified factors such as lack of money, spending vacations at their residence, household obligations, and lack of time as reasons for nonparticipation in tourism. These factors not only harmed the length of stay but also restricted any possibility of tourism. The study concluded that there exists a divide between rich and poor in tourism consumption, even though the accessibility of destinations has increased over the years. Ganzon and Fillone [62] applied statistical tools like regression analysis, cross-classification of variables, and descriptive analysis to derive conclusions for the length of stay of tourists. Factors such as civil status, employment status, budget, frequency of vacations in a year, the purpose of the trip, and average expenditure were found to affect the length of stay. The study provided a direction for future research in the area as they concluded that single international tourists contribute more foreign exchange earnings than family trips. Šergo et al. [63] explored the determinants of arrivals from different nations at a destination in Croatia and focused on the interaction effect between individual characteristics of origin countries and relative prices on length of stay and other similar variables. Overcrowding and congestion of destination were the top reasons which lead to international tourist arrival in the country. Rodríguez et al. [64] analyzed the determinants of length of stay by categorizing tourists into the same-day visitors and tourists. The analysis of the findings was done using the five alternative Heckman selection models. The study concludes that same-day visitors who belong to the young age group have a shorter stay while foreign tourists who come for business purposes usually have longer stays in the city. The implications for the policymakers are then discussed based on findings. Lal et al. [37] in their study determined the factors that influence the average length of tourist stay and developed a hierarchical relationship using the interpretive structure modeling (ISM) technique. The study concluded that marketing and incentivizing more extended stays would increase the average length of tourist stay.

2.1.5 Develop emerging tourism avenues and change in policies

As pointed out in various studies, developing new avenues or preferably developing nonexistent avenues at new destinations would help in the sustainable development of the tourism industry. Stoddard et al.

[65] proposed that tourism development organizations should adopt the approach of the Triple Bottom Line to enhance their sustainability. By incorporating the environmental and social aspects in their strategic policymaking, the authorities could develop models that would not just generate growth but would lead to the overall development of the destinations. They focused on the potential benefits of adopting the strategy and recommended that a reliable instrument should be constructed that would measure the environmental and social performance of the tourism sector. Edward and George [66] emphasized on the entrepreneurial challenges that are encountered by the niche tourism operator in Kerala. It generally occurs in the growth stage that entrepreneurs come out with consistently innovating the product and its quality delivery, coordinating with the supplier, and budget constraints. Ali-Knight [67] focused on developing key positioning of niche tourism products for the tourist by understanding the perception and motivations of the tourist, creating awareness through portraying niche tourism as a distinct market segment and its importance in developing destination image branding.

Parmar [68] studied the emerging dimensions of tourism in the state of Himachal. The researcher argues that tourism has several economic benefits, so developing new avenues will also lead to an increase in such benefits. The study focused on the impact of services and facilities available to the tourists and the impact of these on the behavior of tourists such as their length of stay. Rathore [69] suggests the role of rural tourism in making changes in the economy and society. The study suggested that the government should promote private organizations to promote tourism in rural areas and recommended understanding the sociodemographic characteristics to better implement rural tourism policies. Nwafor [70] explored the niche sectors in the Western Cape province of South Africa and the potential contribution and role of medical tourism in the tourism industry. The study concluded that adequate information relating to the market size, cognizant of the motivational factors, up to date market information, complementary tourism offering, improved awareness, training, and inspection can help in better strategizing and offering of niche products. Prabakaran and Panchanatham [71] explored the various niche tourism products in India and their positioning as a different product to the consumers. It identified that niche tourism plays a key role in reinventing and positioning thus posing a whole new window of opportunity, while the promotion of niche markets can help in building

India's strength. Nag [72] investigated major environmental and ecological problems in Himachal Pradesh. The author recognized two main approaches around which the concept of eco-tourism revolves, one in which the environment is used for marketing and another in which focus is to protect the environment so that tourism remains for a longer time. He concluded that there is a need for combining these approaches. By marketing the interest of people in the environment, one could try to motivate people to protect their very essence. Jaykumar and Fukey [73] identified the contribution of wine tourism as a niche product in South Indian cities. There is great optimism among the owners and government in promoting the niche market. But the high tax regime and stringent while complicated norms and uneven benefits are major issues faced by the industry in offering the niche product. Ursache [74] envisaged that with changing consumption patterns, niche tourism could actually substantiate and contribute significantly to the economic development of the European Union eastern periphery. Through reinventing and innovation, it provides its peripheral areas to take advantage of the unique offering and offer it as a different product. The study also suggested measures to ensure its sustainability. Gupta [75] identified the scope and trends of a niche tourism segment called Reality Tourism in India. The study discussed the potential benefits and negative consequences of promoting reality tourism in India. The author considered various parameters that impact the satisfaction level of reality tourist and by developing a suitable scale calculated the satisfaction level of such tourist. The research concluded that reality tourism had positive consequences for slum dwellers and leads to their socio-economic development.

Tran [76] conducted a study on the potential of sustainable tourism development in Vietnamese island. To determine the level of tourism and understand the potential for sustainable tourism, the researcher used the models like Tourism Area Life Cycle and Destination Analysis. He emphasized the use of efficient and effective marketing for tourism promotion as well as the use of technology in developing an information system for use by tourists as well as the local authority. The study concluded by analyzing the impact of different stakeholders especially the policymaker in promoting sustainable tourism in Vietnam through training, education program, and different environment protection laws. Wang and Lalrinawma [51] emphasized on integrating the aspect of environmental and social concern with the idea of rural tourism. The study suggested that policymakers in Assam have adopted the approach of

developing the tourism industry responsibly and cautiously. The study concluded that various forms of rural tourism do not adhere to the concept of sustainability. Shukla [77] concluded that mass tourism in Himachal Pradesh is destroying the natural beauty of the state although slowly. It is creating a burden on infrastructure and so is degrading the quality of life of residents. The arrival of tourists is beyond the carrying capacity of the destinations. The study found out that the economic contribution from such arrivals in terms of generation of money is very less (around INR 600 per person). Thus, considering the cost associated with them, this benefit is very less. The study brought forward the unplanned development approach of the tourism development board and recommends an inspection of the damage to the industry and benefits drawn. Thakur [78] projected that for Himachal Pradesh to make its entry in top destinations around the world; it has to adopt the principle of sustainable development and identified the prospects of eco-tourism in the state and creating a parallel system of providing training to those marginalized sections that are disassociated with the tourism sector. Genc and Genc [79] suggested that tourism could provide more opportunities for a better and wider approach to social inclusion. The study focused on social exclusion and discussed the negatives aspect of failure to include societies with the aim of rural development. Hussain et al. [80] studied the impact of the tourism industry on the social and economic changes observed in the people of the study area. Due to the infrastructural development in the transport and technological sector, a road for social inclusion has eased. Kunz and Ratliff [81] developed a model to identify the niche segment in the tourism industry and identified the appropriate segment of tourists that enables the entrepreneurs to develop the product via identifying the most viable economic opportunity. Kumar et al. [38] studied the emerging trends and status of niche tourism in India and highlighted the various types of niche tourism which are gaining popularity in recent times. The study also highlighted the process by which niche tourism destinations could create an image for themselves through the destination brand imaging process.

2.2 Technology and tourism

Technology is defined as an application of scientific knowledge for practical purposes, especially in industry. Technology has covered leaps and bounds in the last

century. The impact of technology can be felt in every aspect of one's life. Be it the advancement in computer technology or techniques and processes and technological advancement has benefitted as well as caused damages to society. Technology has an impact on every industry in the market. Tourism is not an exception to it.

2.2.1 Importance of technology in tourism development

Technology has made tourism an interactive and efficient industry. By making possible things that were unthinkable, technology has made the overall experience of a tourist more satisfactory. A tourist uses technology in its travel management. Be it planning of a tour, technology assists in efficient tour planning by keeping a record of destinations, giving information about the climate and major attractions of a place, and also helps in the scheduling of tour. Availability of hi-end gadgets such as smartphones, smartwatches, and heads-up display, requires less use of photographers and tour guides, making a tourist independent of other people. Technology also enhances the security of a tourist. Similarly, the availability of digital payments has made traveling a hassle-free activity. On the other hand, technology also assists other stakeholders in marketing themselves to tourists more effectively and efficiently. The reach of stakeholders has increased drastically due to the advent of technology. Several products that were impossible to offer before are not only being offered but are being catered to suit the needs of tourists. Overall, technology has introduced customization in tourism activities. This has resulted in tourism from being a mass tourism activity to and niche tourism activity as well. Several exciting benefits could be attributed to the use of technology in the tourism industry:

- **Development of new products:** several tourism products could find their origin lies in the premise of the use of technology in the industry. Niche tourism products such as virtual tourism and space tourism are possible only due to the use of technology.
- **Enhanced security features:** features such as radio frequency identified tag have enabled the authorities to track down the vehicles passing down the toll plazas. Also, the use of a Global Positioning System provides relief to the tourists if they need to find out the way in darkness or an unknown place.
- **Ease of traveling:** technology has made travel management more convenient and hassle-free. From assisting in tour planning to book tour itineraries and provide the facility of payment in one click, technology makes tourism more fun.

- Ease of database management: stakeholders can prepare a database of the tourist more economically and conveniently using the technology. The software has been designed keeping in mind the need for hotel management. Similarly, photographers can keep a record of their photos in more efficient storage devices and tour guides can use technology in providing visual tours to their audiences.
- Extending reach of stakeholders: the most crucial issue for stakeholders is a way to advertise or market them. Technology has made it possible to market beyond their geographical presence at a very minimal cost. Social media marketing enables a stakeholder to advertise themselves to potential tourists even before they visit a destination or are at the planning stage of their tour.

2.2.2 Trends in technology and tourism research

Rapid technological advancement has its imprint on the tourism industry as well. Research in India and around the world on the topic of technology and tourism has witnessed high growth over the last decade due to rapid digitalization and technological advancement. Much relevant literature exists on the use of technology in the tourism industry. An analysis of word count conducted using the Nvivo software on 50 research papers on the use of technology in tourism highlights that major themes and patterns around which the literature revolves the concept of the use of technology in the tourism such as in the field of marketing, travel management, and other applications of technology. The other theme identified is the importance and benefits that technology provides in the tourism industry such as ease in information dispersal. The study also highlights that a significant chunk of research in this area was

conducted between 2008 and 2014. Table 2 lists down trends extracted from the research papers.

Figure 2 is the representation of the top 100 words that are associated with the research on technology and tourism.

A look at the literature available on the topic highlights the various aspects of technology in tourism. Heart et al. [95] revealed the lack of an integrated application suite for IT in the hospitality industry in hotels of Israel. The study concluded that a more affordable means for procuring information technology will help in expanding the base for IT and will allow the industry to compete globally. Law and Jogaratnam [96] presented an analysis of the survey conducted to determine the usage of IT in Hong Kong hotels and concluded that hotels were using IT to improve customer services and to enhance operational effectiveness. However, there seemed to be less knowledge among the hoteliers concerning using IT for the development of business strategies. The implications of ICT (Information and Communications Technology) in the Tourism sector are widely studied by Shanker [97]. The benefits of ICT associated with the tourism sector include fast diffusion of information, reducing the distance between countries, increased transparency. Hojaghan and Esfaghareh [98] studied the effects of the digital economy on the tourism industry and highlighted the acceptance of technologies in industries such as airlines, hotels, car rentals, tour, and travel operators, and the resultant shift in their way of operations. The study suggested that standards should be set up for effective implementation of digitalization in the industry. Jadhav and Mundhe [99] discussed fields related to tourism and various information technologies available to enhance the existing infrastructure of the tourism industry.

Milović [100] pointed out the development of electronic customer relationship due to digitalization in

Table 2: Trends identified from research papers on technology and tourism

Word	Count	Weighted percentage	Papers covering the word
Tourism	1,919	1.58	Atembe [82], Balasubramanian and Sankar [83]
Technology	1,020	0.84	Cai et al. [84], Egger [85]
Information	933	0.77	Phandee and Pornpatchara [86] and Werthner and Klein [87]
Travel	683	0.56	Mamaghani [88]
Hotel	651	0.53	Jaremen [89]
Media	582	0.48	Hajli [90]
Mobile	451	0.37	Adeola and Evans [91] and Chang and Jang [92]
Online	417	0.34	Farkhondehzadeh et al. [93]
Hotels	415	0.34	Ayuso [94]

Source: Author's compilation from several published literature.

the hospitality sector. The study analyzed the impact of websites, social media, and other electronic marketing campaigns on the promotion of hotel and performance of the business. Aramendia-Muneta and Ollo-Lopez [101] analyzed the impact of ICT on the productivity and competitiveness of the travel agency firm. The study concluded that although digitalization has less impact on the competitiveness and increasing productivity, it still has revolutionized the market share of the travel agencies. Egger [85] assessed the potential prospects, benefits, and challenges for near field communications in the tourism industry. The study suggested the use of consistent business models in-combination with push and pull market strategies to enable diffusion of technology in the industry. Leung et al. [102] studied the role and use of social media in influencing the decision of tourists and travelers. The study was a literature review analyzing papers published on social media and its impact on consumers. The study highlighted the different perspectives of social media usage among different stakeholders in the tourism industry. Mpiti [103] explored the prospects of the use of ICT in agro-tourism for the development of the local community. The study tends to provide the farmers with the various types of technologies that are available and can be incorporated by them in tourism which would help in their development as well. Chang and Jang [92] investigated the use of mobile phones by the young

and literates in availing smartphone booking services. The study concluded that price level, relative advantage, and complexity significantly impact booking by smartphones. Tsokota et al. [104] examined the current usage and adoption of information and communication technology in the tourism sector in Zimbabwe. The study identified a lack of government policy, ICT legislation, interrupted network supply, and commitment from organizations are some of the hindrances in adopting technology in the tourism industry. The study suggested the implementation of strategy at the national level to diffuse technology in the tourism sector. Bilghan and Nejad [105] mentioned that the service sector has played an essential role in the development of various industrialized economies. The study identified trends such as the concept of sharing economy that has been emerging in the hospitality sector due to the innovation through digitalization. The study also points out that now consumers themselves have been more demanding for digitalization. Jaremen [89] discussed the usage of information and communication technology in the hospitality industry, particularly in the hotel industry. The study suggested that ICT is applied in hotels to improve service quality. Also, the capital requirement was found to be a significant barrier in implementing ICT in the hotel industry. Atembe [82] examined the impact of wearable devices on customer value creation and satisfaction in the tourism industry. The study highlighted the issue of the lack of literature in the related field. The study provided an overall view of the functionality of wearables and their possible use in tourism. The study by Maráková and Medvedová [106] showed that decrease in the number of tourists, length of stay, and decreasing sales have forced the market players of the tourism industry in Europe to innovate in terms of their products as well as the way they cater their customers. The study concludes that there is a need to carry out more research about innovation in the tourism and hospitality sectors. Further, the focus of the policies designed should be on medium- and small-scale enterprises in the tourism industry. Rajamohamed [107] studied the role and importance of ICT and its impact on the tourism industry in particular. The study was conducted to determine how ICT affects the hospitality sector and what is the viewpoint do the managers about the role of ICT in the tourism and hospitality industry. Wahab [108] concluded that information and communication technology help in dispersing information to a larger audience at a low cost and less time. The increase in quantum of information to be shared with different stakeholders makes it necessary to incorporate ICT in the

tourism industry. The integration of ICT and Tourism is essential for the development of the Tourism Industry.

Through a case study model, Alexis [109] examined the impact of digitalization and automation in the tourism industry. The study suggested that instead of resisting digitalization, stakeholders must embrace it. This would help in increasing customer satisfaction and would also open future research prospects in the field. Dhingra [110] studied the impact of the digital revolution through schemes such as Digital India on the tourism industry and listed out the benefits that digitalization has provided to the industry. By providing benefits such as easier payment services, more informed travel choices, and developing new-age travel trends, digitalization has transformed the way one travels. Greenwood and Quinn [111] examined the influence of digital amnesia and its influence on future tourists. The study highlighted that digitalization has an influence on decision-making by tourists, the way marketing messages are conveyed to them, and the way the tourist experience can be memorized. Härting et al. [112] conducted an empirical study in Germany to find out the potential benefits that digitalization could offer to the tourism industry. The study also discussed how far the tourism industry has come concerning digitalization and how much more it needs to do. The study also identified the main drivers of digitalization in the tourism industry with the help of the structural equation modeling technique. Kansakar et al. [113] suggested that the adoption of ICT by the hospitality industry has reshaped the way the industry is providing services. The study concluded that there is a need for updating of technological background of institutions providing the services to enable them to meet the changing environment of the industry. Matteo et al. [114] examined the impact of digital endowment and developing telecom infrastructure on domestic tourism demand in Italy. The study concluded that digital endowment positively impacts domestic tourist inflow. Increased level of literacy and level of consumer income has a positive impact on the domestic tourism industry. Adeola and Evans [91] studied the impact of mobile phones and the Internet on tourist inflow in Africa. The study showed a bi-directional causality relationship between Internet usage, squared Internet usage and tourism, unidirectional causality between mobile penetration and tourism, and bidirectional causality between squared mobile penetration and tourism. Kumar and Kumar [115] studied the effect of ICT on tourism demand and concluded that destination income positively impacts tourism demand but in the short-run. Also, ICT had a

causality impact on tourism demand as concluded by the study. Khatri [116] conducted a literature review of studies that have been previously conducted on the role and importance of technology in the hospitality sector. The study concluded that technology in the tourism industry is used mainly for information acquisition and dispersal, creating innovation and managing operation and process. The study further suggested that the role of IT in customer value creation and in developing competitive advantage is yet to be studied. Gonzalez et al. [117] conducted a review of the literature on the use of ICT in the hospitality industry. The study hinted toward a huge potential for the use of ICT in hotels as well as possibilities of the scope of research in this area. Brdar and Gajić [118] determined the differences in degree and method of using IT by tourist agencies in Serbia. The study concluded that although the companies in Serbia use IT in operations, the level of their skills and capabilities differ widely. Cai et al. [84] conducted a literature review of papers on the theme of tourism and technology use. The study identified the research gap that existed in the current literature and also hinted towards probable research fields in the area.

3 Conclusion

Although the literature is available on rural tourism, sustainable tourism, and sustainable rural tourism, it primarily focuses on the conceptualization, its importance, and significant hindrances in its course of development. A profound conclusion that can be drawn from the literature available is that rural tourism offers several significant advantages that can potentially solve several problems of the economy and tourism industry. There are problems in its development duly highlighted by the literature, but the solution is available readily. However, the literature fails to draw certain relevant conclusions. There exists a lot of literature gaps in framing strategic policies for the development of rural tourism. The literature is silent on the issues regarding the policy framework for rural tourism. First of all, the literature is silent on the issue as to why a tourist will consume rural tourism. There is no mention of the factors that can persuade a tourist to go for rural tourism. Second, the literature is silent on the issue that although rural tourism has been on the policies of government over a long time, but is yet to reach its full potential. The literature fails to draw a critique of the existing policies of the government of India for rural

tourism. Third, the current status of rural tourism in India and particularly in Himachal Pradesh is not discussed in the literature, and fourth, the literature does not talk much about the negative consequences of rural tourism for the state. The rationale for selecting Himachal Pradesh as the state for rural tourism development lies in the fact that 99.5% of the total area of the state lies in the rural region. Also, as per the government of Himachal Pradesh [119], the rural region encompasses about 90% of the total population of the state. Both these reasons present favorable prospects for the development of rural tourism.

Also, from the literature on tourism and technology, two conclusions can be drawn instantly: (1) Technology has made a severe positive impact on the way tourism is being conducted in the present era. Further, it also gives insight that technology will possibly revolutionize the tourism industry in the future. (2) Technology has provided many positive benefits to the tourism industry. Although there are negatives that can be attributed to technology through tourism positives derived outweigh drawbacks to a large extent. Therefore, the use of technology in tourism is a welcoming step. However, certain questions need to be answered but it cannot be done through the present literature. One such question is that can technology in the tourism industry helps better in fulfilling the objective of financial and social inclusion. Although the impact of technology in financial inclusion is understood in the theoretical sense, combining it with tourism and social inclusion as a whole needs to be understood. Also, the extent to which the impact of technology in tourism remains positive needs to be addressed. Third, in rural areas with limited infrastructure and technical knowledge, how could technology be made more people-friendly to propagate its use needs to be discussed in depth.

So, in a nutshell, the literature highlights several key possibilities for rural tourism through the use of technology. Studies have suggested that the extent of financial inclusion in Indian rural areas is not good. The major work in this regard has been done in developed areas, but the condition is not acceptable in states that are not much developed. Also, social inclusion is not much of a thought topic in Indian research. A significant problem associated is that policies regarding financial inclusion and social inclusion do not work much in the practical sense. Financial inclusion coupled with social inclusion must have the potential to turnaround the image of a region economically. The entire above conclusion can be summarized into a statement that *Financial and Social Inclusion are imperative for rural*

development. There is much focus on the results such as the opening of a bank account but less pressure is given on the means to achieve those results. The rural people lack a reason to open bank accounts and use financial service more often owing to fewer requirements due to limited applications of these resources. The government should make provisions to enable them to sue financial resources more openly, regularly, and conveniently. Similarly, strategies regarding social inclusions are not working as required.

Rural tourism can be an answer to the problems discussed above. By providing a means to apply financial resources such as acceptance of digital payments, financial convergence could be achieved among rural people. Also, by inviting society at large, there could be a mutual exchange of customs, knowledge, and traditions that could assist in social inclusion at a better rate than teaching about them in classrooms. So, keeping in mind these facts, two central questions can be drawn that the literature fails to answer convincingly. First, what should be the best way to channelize financial inclusion through the rural tourism industry? Moreover, second, which rural tourism product is best capable of promoting social inclusion? This study, therefore, tends to present the best ways tourism can be used to promote financial inclusion more effectively and the possible impact of rural tourism and its products on social inclusion, thereby contributing to rural development. This study highlights an interesting observation. The emerging trends in different fields if could be grouped and a study could be conducted, several desired objectives could be achieved. The focus of the government is on inclusiveness, financial and social, sustainability, and rural development. This study highlights that although work is being done in this regard, it is fabricated in nature. The government schemes “Aj Purani Rahon Se” which works for promotion and development of cultural and historical tourism and “Nai Rahein Nai Manzile” for exploring the under-explored destinations of the state are yet to yield the desired results. There is a need to collaborate with the efforts conducted in different spheres to fully utilize the potential. To achieve the objective of financial and social inclusion effectively, literature has pointed out that rural tourism could be an effective tool. But the major concern is the policies and strategies which have been developed for the development of rural tourism. So, the ISM technique will be used along with certain other flexible strategies to chalk out a strategic crystal that will ensure the development of the rural tourism industry. Then, there are certain socio-economic benefits associated with

the rural tourism industry. How well these benefits are extracted out will determine how well one can achieve the agenda of financial and social inclusion. Through enhancing inclusiveness and cohesiveness in society, one can achieve rural development, which would also positively impact the development of the tourism industry. Nevertheless, the critical issue regarding the development of rural tourism is sustainability. Sustainability will ensure how well one can achieve all the above-addressed statements. To ensure that the development of rural tourism is sustainable, the use of flexible strategies such as the ISM technique will be imperative. Thus, one can see that all these statements are connected in a circular loop. Fulfilling one objective will itself suffice the starting of another objective. After the second objective is fulfilled, it will strengthen the impact of the first objective. This loop will empower the system to continue in the long run and will also enable the system to absorb issues that are not existent in the present but can be problematic in the future course of action.

4 Study limitations

The study is bounded by some limitations as well. A limited number of journals and research papers have been drawn and referred for the study. Also, focus laid in research is limited to exploring a few dimensions, i.e., technology and sustainability. More areas can be traced and be researched to uncover its linkage with other streams, opening up multiple dimensions demanding the attention of policymakers as well as researchers. The extensive study can be done, detailing out different areas touched upon by researchers and the kind of technique adopted to study the specific objective, paving the way for future scope of research.

Acknowledgments: The authors of the paper are thankful to the anonymous reviewers and the editor. We also acknowledge the financial support received from the Indian Council of Social Science Research under the IMPRESS scheme grant number IMPRESS/P2321/308/2018-19/ICSSR.

References

[1] Farsani NT, Coelho C, Costa C. Geotourism and geoparks as novel strategies for socio-economic development in rural areas. *Int J Tour Res.* 2011;13(1):68–81.

[2] Ridderstaat J, Croes R, Nijkamp P. Tourism and long-run economic growth in Aruba. *Int J Tour Res.* 2013;16(5):472–87.

[3] Pratt S. Potential economic contribution of regional tourism development in China: a comparative analysis. *Int J Tour Res.* 2014;17(3):303–12.

[4] Zapata MJ, Hall CM, Lindo P, Vanderschaeghe M. Can community-based tourism contribute to development and poverty alleviation? Lessons from Nicaragua. *Curr Issues Tour.* 2011;14(8):725–49.

[5] Yang X, Hung K. Poverty alleviation via tourism cooperatives in China: the story of Yuhu. *Int J Contemp Hospital Manage.* 2014;26(6):879–906.

[6] Briedenhann J, Butts S. Application of the Delphi technique to rural tourism project evaluation. *Curr Issues Tour.* 2006;9(2):171–90.

[7] Singh P. Role of geographical information systems in tourism decision making process: a review. *Inf Technol Tour.* 2015;15(2):131–79.

[8] Nair V, Hussain K. Conclusions: contemporary responsible rural tourism innovations. *Worldwide Hospital Tour Themes.* 2013;5(4):412–6.

[9] Nair V, Hussain K, Lo MC, Ragavan NA. Benchmarking innovations and new practices in rural tourism development. *Worldwide Hospital Tour Themes.* 2015;7(5):530–4.

[10] Sibila Lebe S, Milfelner B. Innovative organisation approach to sustainable tourism development in rural areas. *Kybernetes.* 2006;35(7–8):1136–46.

[11] Lone RA. Agriculture and rural development in India. *Linkages.* 2014;7(2):65–74.

[12] Indolia DU, Prasoon K. An overview of policies & schemes of Govt. of India to promote rural sector & tourism. *Int J Appl Res.* 2015;1(13):775–8.

[13] Singh S, Bhowmick B. An exploratory study for conceptualization of rural innovation in Indian context. *Proc Soc Behav Sci.* 2015;207:807–15.

[14] Bhatia A, Kiran C. Rural development through e-governance initiatives in India. *IOSR J Bus Manage.* 2016;1(1):61–9.

[15] Samanta DPK. Development of rural road infrastructure in India. *Pac Bus Rev Int.* 2015;7(11):86–93.

[16] Reddy DVV, Shilpa SR. Rural tourism – a catalyst for rural economic growth. *Int J Human Soc Sci Invent.* 2016;5(5):14–9.

[17] Garjola R, Singh K. Analytical study on the technological problems of rural India and their remedies. *Int J Emerg Technol.* 2017;8(1):623–4.

[18] Vanitha D, Vezhaventhan D. A study on rural development in TamilNadu. *Int J Pure Appl Math.* 2018;120(5):71–86.

[19] Aall C. Sustainable tourism in practice: promoting or perverting the quest for a sustainable development? *Sustainability.* 2014;6:2562–83.

[20] Kumar S, Shekhar, Attri K. The economic contribution of tourism industry in India: an appraisal. *Int J Appl Hospital Tour Res.* 2018;10:1–12.

[21] Qian J, Shen H, Law R. Research in sustainable tourism: a longitudinal study of articles between 2008 and 2017. *Sustainability.* 2018;10(590):1–13.

[22] Bittner M. Dark tourism – evaluation of visitors experience after visiting thanatological tourist attractions. *Turizam.* 2011;15(4):145–58.

- [23] Dar AA, Reshi SY. Future of the past: developing Jammu and Kashmir as a dark tourism destination. *Proc Department Geograph Tour Hotel Manage.* 2016;45(1):49–58.
- [24] Fonseca AP, Abra CS, Silva C. Dark tourism: concepts, typologies and sites. *J Tour Res Hospital.* 2016;S2-002:1–6.
- [25] Bilali H, Despotovic A, Radosavac A, Berjan S, Abouabdillah A, Rodic T, et al. Perceptions of rural tourism development potential in south-eastern Bosnia. *IJERD – Int J Environ Rural Dev.* 2014;5(2):1–6.
- [26] Berjan S, Bilali H, Radovic G, Sorajic B, Driouech N, Radosavac A. Rural tourism in the Republika Srpska: political framework and institutional environment. *Turkish J Agric Nat Sci.* 2014;2:1805–11.
- [27] Raghavendra DV, Vijayachandra RS, Shilpa V. Rural tourism – a catalyst for rural economic growth. *Int J Human Soc Sci Invent.* 2016;5(5):14–9.
- [28] Mann GS. Impact of tourism on the economy of Himachal Pradesh. *Int J Sci Technol Manage.* 2017;6(5):91–5.
- [29] Chavan RR, Bhola SS. Indian tourism market: an overview of emerging trends and development. *Global J Comm Manage Perspect.* 2014;3(4):113–22.
- [30] Hamzah A, Yassin SM, Samah BA, D'Silva JL, Tiraiyaei N, Shaffril HM, et al. Socio-economic impact potential of agro tourism activities on Desa Wawasan Nelayan community living in Peninsular Malaysia. *Afr J Agric Res.* 2012;7(32):4581–8.
- [31] Masood I, Nguyen NTB. A community response to tourism, focusing on the home-stay program in Khurpatal village in Nainital, Uttarakhand, India. *J Urban Region Stud Contemp India.* 2018;4(2):55–62.
- [32] Songkhla TN, Somboonsuke B. Impact of agro-tourism on local agricultural occupation: a case study of Chang Klang district, southern Thailand. *ASEAN J Hospital Tour.* 2012;11:98–109.
- [33] Verma P, Bhardwaj S, Sisode B, Chauhan DKA. Tourism and culture: pioneers of development local rural resort, Hodka village (Bhuj). *Global Res Dev J Eng.* 2019;4(9):99–104.
- [34] Berry S, Ladkin A. Sustainable tourism: a regional perspective. *Tour Manage.* 1997;18(7):433–40.
- [35] Choo H. Marketing innovations for sustainable destinations. *Tour Manage.* 2011;32(4):959–60.
- [36] Deshwal P. Tourism industry: an instrument of Indian economic growth through FDI. *Int J Sci Res Manage.* 2015;3(2):2137–40.
- [37] Lal M, Kumar S, Shekhar. Understanding the dynamics of length of stay of tourists in India through interpretive structure modeling. *Rev Profession Manage.* 2018;16(2):14–24.
- [38] Kumar S, Attri K, Shekhar. Niche tourism: sustainability and marketing strategies. *Tour Innov.* 2018;8(1):1–9.
- [39] Wilson S, Fesenmaier DR, Fesenmaier J, Es JCV. Factors for success in rural tourism development. *J Travel Res.* 2001;40(2):132–8.
- [40] Pesonen J, Komppula R, Kronenberg C, Peters M. Understanding the relationship between push and pull motivations in rural tourism. *Tour Rev.* 2011;66(3):32–49.
- [41] Ghaderi Z, Henderson JC. Sustainable rural tourism in Iran: a perspective from Hawraman Village. *Tourism Manage Perspect.* 2012;2(3):47–54.
- [42] Kaurav RPS, Kaur, Singh K. Rural tourism: impact study – an integrated way of development of tourism for India. In: Miryala RK, editor. *Changing Paradigms of Rural Management.* Hyderabad: Zenon Academic Publishing; 2013. p. 313–20.
- [43] Tiwari MR. Sustainable rural development through tourism practices: a case of Ranakpur, Rajasthan. *Pac Bus Rev Int.* 2014;7(5):1–15.
- [44] Fernández-Hernández C, León CJ, Araña JE, Díaz-Pérez F. Market segmentation, activities and environmental behaviour in rural tourism. *Tour Econ.* 2015 January;22(5):1033–54.
- [45] Kachniewska MA. Tourism development as a determinant of quality of life in rural areas. *Worldwide Hospital Tour Themes.* 2015;7(5):500–15.
- [46] Orsolya SE. The trends of rural tourism research in the past fifteen years. In Paper presented at SITCON 2015 – Singidunum International Tourism Conference.; 2015. p. 222–228.
- [47] Pagdhare MDL. Feasibility of development of rural tourism in Palghar district: Maharashtra. *Scholar Res J Interdisciplin Stud.* 2015;3(21):1134–40.
- [48] Singh K, Gantait A, Puri G, Swamy GA. Rural tourism: need, scope and challenges in Indian context. In: Kumar DA, editor. *Hospitality and Tourism: Challenges, Innovation, Practices and Product.* New Delhi: Adhyayan Publishers and Distributors; 2016. p. 32–47.
- [49] Farmaki A. An exploration of tourist motivation in rural settings: the case of Troodos, Cyprus. *Tour Manage Perspect.* 2012 April;2(2–3):72–8.
- [50] Kapur S. Rural tourism in India: relevance, prospects and promotional strategies. *Int J Tour Travel.* 2016;9(1–2):40–9.
- [51] Wang GL, Lalrinawma H. Impact of tourism in rural village communities: India's sustainable tourism. *Int J Bus Manage Invent.* 2016;5(12):75–81.
- [52] Gabor. A content analysis of rural tourism research. *J Tour Herit Serv Market.* 2017;1(1):25–9.
- [53] Chin CH, Law FY, Lo MC, Ramayah T. The impact of accessibility quality and accommodation quality on tourists' satisfaction and revisit intention to rural tourism destination in Sarawak: the moderating role of local communities' attitude. *Global Bus Manage Res Int J.* 2018;10(2):115–27.
- [54] Osti L, Cicero L. Tourists' perception of landscape attributes in rural tourism. *Worldwide Hospital Tour Themes.* 2018;10(2):211–21.
- [55] Xue L, Kerstetter D. Rural tourism and livelihood change: an emic perspective. *J Hospital Tour Res.* 2018;XX(X):1–22.
- [56] Sanagustin-Fons V, Lafita-Cortés T, Moseñe JA. Social perception of rural tourism impact: a case study. *Sustainability.* 2018;10(2):1–25.
- [57] Wurst C. The length-of-stay problem in tourist studies. *J Market.* 1955;19(4):357–9.
- [58] Menezes AGD, Moniz A, Vieira JC. The determinants of length of stay of tourists in the Azores. *Tour Econ.* 2008;14(1):205–22.
- [59] Barros CP, Machado LP. The length of stay in tourism. *Ann Tour Res.* 2010;37(3):692–706.
- [60] Thrane C. Tourists' Length of stay: the case of international summer visitors to Norway. *Tour Econ.* 2012;18(5):1069–82.

- [61] Alejziak W. Tourist activity inhibitors. *Int J Cult Tour Hospital Res.* 2013;7(1):11–27.
- [62] Ganzon MK, Fillone A. An investigation on tourists' length of stay in Guimaras Province, Philippines. *Tour Plan Dev.* 2014;12(2):238–46.
- [63] Šergo Z, Poropat A, Ružic P. The determinants of length of stay and arrivals of tourists in the Croatia: a panel data approach. *Tour Hospital Ind.* 2014;2014:321–35.
- [64] Rodríguez XA, Martínez-Roget F, González-Muriasa F. Length of stay: evidence from Santiago de Compostela. *Ann Tour Res.* 2018 January;68:9–19.
- [65] Stoddard JE, Pollard CE, Evans ME. The triple bottom line: a framework for sustainable tourism development. *Int J Hospital Tour Admin.* 2010;13(3):233–58.
- [66] Edward M, George BP. Niche tourism marketing. *IJUM J Case Stud Manage.* 2010;1:23–35.
- [67] Ali-Knight JM. Edinburgh Napier University. [Online]. Edinburgh Napier University; 2011. Available from: <http://researchrepository.napier.ac.uk/id/eprint/5376>.
- [68] Parmar JS. Tourism development in Himachal Pradesh: emerging dimensions. *Int J Hospital Tour Syst.* 2012;5(1):66–76.
- [69] Rathore N. Rural tourism impact, challenges and opportunities. *Zenith Int J Bus Econ Manage Res.* 2012;2(2): 252–60.
- [70] Nwafor O. Niche tourism and the challenges of developing medical tourism in the Western Cape Province of South Africa. *J Emerg Trends Educ Res Policy Stud.* 2012;3(4):600–4.
- [71] Prabakaran N, Panchanatham N. Niche tourism products of India. *Abasyn J Soc Sci.* 2013;6(1):51–62.
- [72] Nag A. A study of tourism industry of Himachal Pradesh with special reference to eco tourism. *Asia Pac J Market Manage Rev.* 2013;2(4):89–106.
- [73] Jaykumar V, Fukey LN. Issues and opportunities of niche tourism markets – understanding South India wine tourism. *Int Knowledge Sharing Platform.* 2014;4(16):51–60.
- [74] Ursache M. Niche tourism markets – means of enhancing sustainable economic development in EU'S eastern periphery. *CES Working Papers.* 2015;VII(2A):648–61.
- [75] Gupta V. Indian reality tourism – a critical perspective. *Tour Hospital Manage.* 2016;22(2):111–33.
- [76] Tran HTG. An exploration of the potential for sustainable tourism on selected Vietnamese islands. Australia: Southern Cross University; 2016.
- [77] Shukla A. Himachal Pradesh's Model Of Tourism Is Not Sustainable [Online]. Hillpost. Available from: <https://hillpost.in/2017/08/himachal-mass-tourism-not-sustainable/109286/#:~:text=MasstourisminHimachalis, idyllictownsintourbannightmares.&text=Thestatewasvisitedby,timesitsownpopulation!->.
- [78] Thakur A. The pioneer. [Online]. The Pioneer; 2017. Available from: <https://www.dailypioneer.com/2017/columnists/himachal-pradesh-the-new-hub-for-ecotourism.html>.
- [79] Genc R, Genc EA. Promotion of social inclusion through new steps in tourism. *Acta Univ Danubius Econ.* 2017;13(3):194–201.
- [80] Hussain A, Fisher D, Espiner S. Transport infrastructure and social inclusion: a case study of tourism in the region of Gilgit–Baltistan. *Soc Inclus.* 2017;5(4):196–208.
- [81] Kunz MB, Ratliff JM. Developing a model for entrepreneurs: niche tourism and consumer typologies. In: *Atlantic Marketing Association Proceedings*. Williamsburg, Virginia: Atlantic Marketing Association; 2017. p. 86–88.
- [82] Atembe R. The use of smart technology in tourism: evidence from wearable devices. *J Tour Hospital Manage.* 2015;3(11–12):224–34.
- [83] Balasubramanian S, Sankar RH. Research and finding technical enablers using ISM for industry 4.0 in Indian agricultural industries. *Int J Innov Technol Explor Eng (IJITEE).* 2019;8(11):137–41.
- [84] Cai W, Richter S, McKenna B. Progress on technology use in tourism. *J Hospital Tour Technol.* 2019;10(4):651–72.
- [85] Egger R. The impact of near field communication on tourism. *J Hospital Tour Technol.* 2013;4(2):119–33.
- [86] Phandee MC, Pornpatchara P. The agricultural areas potentials development for agro-tourism using geographic information system. *Int J Innov Manage Technol.* 2012;3(6):647–50.
- [87] Werthner H, Klein S. Information technology and tourism a challenging relationship. New York: Springer Verlag Wien; 1999.
- [88] Mamaghani F. Impact of e-commerce on travel and tourism: an historical analysis. *Int J Manage.* 2009;26:365–75.
- [89] Jaremen DE. Advantages from ICT usage in hotel industry. *Czech J Soc Sci Bus Econ.* 2016;5(3):6–17.
- [90] Hajli MN. A study of the impact of social media on consumers. *Int J Market Res.* 2014;56(3):387–404.
- [91] Adeola O, Evans O. Digital tourism: mobile phones, internet and tourism in Africa. *Tour Recreat Res.* 2019;44(2):1–13.
- [92] Chang SE, Jang YTJ. Tourism goes mobile: a study on young and literate mobile users' adoption of smartphone enabled tourism product booking services. *J Appl Sci Eng.* 2014;17(1):59–72.
- [93] Farkhondehzadeh A, Karim MRR, Roshanfekr M, Azizi J, Hatami FL. E-tourism: the role of ICT in tourism industry. *Eur Online J Nat Soc Sci.* 2013;2(3):566–73.
- [94] Ayuso S. Comparing voluntary policy instruments for sustainable tourism: the experience of the Spanish hotel sector. *J Sustainable Tour.* 2007;15(2):144–59.
- [95] Heart T, Pliskin N, Schechtman E, Reichel A. Information technology in the hospitality industry: the Israeli scene and beyond. *Inf Technol Tour.* 2001;4(1):41–64.
- [96] Law R, Jogaratnam G. A study of hotel information technology applications. *Int J Contemp Hospital Manage.* 2005;17(2):170–80.
- [97] Shanker D. ICT and tourism: challenges and opportunities. *J Manage Res Anal (JMRA).* 2008;5(1):276–83.
- [98] Hojaghan SB, Esfangareh AN. Digital economy and tourism impacts, influences and challenges. *Proc Soc Behav Sci.* 2011;19:308–16.
- [99] Jadhav VS, Mundhe SD. Information technology in tourism. *Int J Comput Sci Inf Technol.* 2011;2(6):2822–5.
- [100] Milović B. Social media and eCRM as a prerequisite for hotel success. *Manage Inf Syst.* 2012;7(3):026–31.
- [101] Aramendia-Muneta ME, Ollo-Lopez A. ICT impact on tourism industry. *Int J Manage Cases.* 2013;15(2):87–98.
- [102] Leung D, Law R, Hoof HV, Buhalis D. Social media in tourism and hospitality: a literature review. *J Travel Tour Market.* 2013;30(1–2):3–22.
- [103] Mpiti K. The potential use of ICT to enhance agritourism in Lesotho. In: Baggio R, Sigala M, Inversini A, Pesonen J,

- editors. *Information and Communication Technologies in Tourism 2014*. 2014. p. 129–36.
- [104] Tsokota T, Solms RV, Greunen DV. Towards a strategy for ICT integration in the tourism sector in Zimbabwe. In *The 6th Annual International Conference on ICT for Africa 2014;2014;Yaoundé Cameroon*. p. 38–51.
- [105] Bilghan A, Nejad M. Innovation in hospitality and tourism industry. *J Hospital Tour Technol*. 2015;6(3):1–30.
- [106] Maráková V, Medvedová M. Innovation in tourism destinations. *Forum Sci Oeconom*. 2016;4(1):33–43.
- [107] Rajamohamed HRK. Analyzing the importance of ICT in tourism industry with reference to Thailand. *SSRN Electron J*. 2016:2739491.
- [108] Wahab IN. Role of information technology in tourism industry: impact and growth. *Int J Innov Res Comput Commun Eng*. 2017;5(2):260–3.
- [109] Alexis P. R-Tourism: introducing the potential impact of robotics and service automation in tourism. “Ovidius” Univ Ann Econ Sci Ser. 2017;XVII(1):211–6.
- [110] Dhingra N. Digital India and its impact on travel trends. [Online].; 2017 [cited 2018 April 13. Available from: <https://www.makemytrip.com/blog/digital-india-impact-on-travel-trends>.
- [111] Greenwood C, Quinn M. Digital amnesia and the future tourist. *J Tour Fut*. 2017;3(1):73–6.
- [112] Härting RC, Reichstein C, Härtle N, Stiefl J. Potentials of digitization in the tourism industry – empirical results from German experts. In: Abramowicz W, editor. *Towards a Taxonomy of Constraints in Demand-Side-Management-Methods for a Residential Context*. Cham, Switzerland: Springer International Publishing AG; 2017. p. 165–78.
- [113] Kansakar P, Munir A, Shabani N. Technology in hospitality industry: prospects and challenges. *IEEE Consum Electron Mag*. 2017;8(3):60–5.
- [114] Matteo DD, Evangelista V, Ferrari F. Tourism and digital endowment in Italy: a spatial analysis. *Ann Tur*. 2018;VII:23–45.
- [115] Kumar N, Kumar RR. Relationship between ICT and international tourism demand: a study of major tourist destinations. *Tour Econ*. 2019;XX(X):1–18.
- [116] Khatri I. Information technology in tourism & hospitality industry: a review of ten years’ publications. *J Tour Hospital Educ*. 2019;9:74–87.
- [117] Gonzalez R, Gasco J, Llopis J. ICTs in hotel management: a research review. *Int J Contemp Hospital Manage*. 2019;27(2):1–28.
- [118] Brdar I, Gajić J. IT and tourism business – Do Serbian companies in tourism follow contemporary trends? *Industrija*. 2019;47(1):7–22.
- [119] Department of Economics & Statistics. Statistical abstract of Himachal Pradesh 2017–2018 [Internet]. Shimla; 189 2018. Available from: https://himachalservices.nic.in/economics/pdf/StatisticalAbstract_2018_19.pdf.