



Research Paper

The Effect of Digitalization on Sustainable Tourism and Hospitality Management

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Abstract

In its broadest sense, digitisation describes the process of turning analogue information into digital data. By improving corporate processes with the aid of digitised data and information, digitalization increases the effectiveness of work. The goals of programmes like Digital India are to encourage the use of technological tools in the economy to boost productivity and increase efficiency. The government has been focusing on digitization since 2014, and the tourism and hospitality industry is one of the sectors that has been at the forefront of digitalization and is still undergoing exponential transformation. The dynamics of various tourism industry stakeholders have been reflected in this dynamic arena. The tourism industry has adopted digitalization and mixed it with itself to generate new tourism routes as well as methods to boost visitor happiness. When discussing digitalization in tourism, it is commonly considered that it is limited to online hotel booking and digital payments. "Tourism is a critical pillar for the conservation of natural and cultural heritage," says UN Secretary-General Antonio Guterres. Therefore, these areas will face considerable repercussions on their natural resources, consumption patterns, pollution levels, and social systems as additional regions and nations grow their tourism sectors. To establish a healthy balance between the three components of tourist development—the environmental, the economic, and the socio-cultural—"sustainable tourism and hospitality management" has thus become the new buzzword for tourism operators. This delicate balancing act strives to ensure the tourism industry's long-term viability. To be sustainable, we must think about how our actions will affect people on a social and economic level as well as the environment. Therefore, social justice, environmental integrity, and economic growth serve as the foundation of sustainable tourism. This article's major goal is to determine how digitalization affects environmentally friendly travel and hospitality. The paper further seeks to address how digitalization impacts various stakeholders in the tourism industry. For this study, both primary, as well as secondary data, are used. Previous studies on the subject, published government reports, newspaper stories, online publications, and journal papers are some examples of secondary data sources. The primary data is collected through a questionnaire consisting of close-ended questions which are based on a five-point Likert scale mainly. The total number of respondents used in this study was two hundred (50 tourists, 50 from the planning authority, 50

travel agencies, and 50 hotel and restaurant owners). The response from respondents was collected through the convenient sampling method which is a type of non-probability sampling in which respondents were selected based on convenience. The results suggested that digitalization significantly ($p < 0.05$) helps all the stakeholders according to their needs. It helps tourists in finding a suitable place where they enjoy as per their needs. YouTube videos, and promotions from the tourism planning authority, hotels, and travel agencies of different countries/states significantly ($p < 0.05$) help them choose their tourist destinations. Reviews from other tourists on social media, and on hotel websites also significantly ($p < 0.05$) help tourists in selecting the hotels according to their budget and the services offered by them. Similarly, digitalization significantly ($p < 0.05$) help travel agencies, hotel, and restaurant owners to attract tourist. Digitalization significantly increases their approach to the new tourists which positively affects their economy and gave them changes to offer a good salary to their staff and provide jobs on permanent bases with proper leisure time this helps their staff in maintaining their work-life balance thus helps in improving socio-economic condition of hotels and travelling agencies workers. Except this when the economic condition of hotels and travel agencies increases, they invest more in preserving the natural ecology and heritage of nearby areas too. Natural ecology and heritage always significantly ($p < 0.05$) attract tourism. Therefore, it can be concluded that other players in the tourism and hospitality sectors adopt digitalization as tourists do, giving them a competitive advantage over their rivals. The industry would move away from traditional bookings by making more individualized offerings through digital mechanisms. This would encourage industry-wide digitalization even more. The use of digitalization by tourists, their use of social media platforms, and the need to retain ties with tourists will lead to an increase in other stakeholders' digital participation. Positive customer comments and evaluations will also be used as the foundation for lucrative and more specialised offers. Customer reviews would also help businesses attract new clients by confirming the veracity of allegations made by stakeholders. The key to effective digitalization is making the best use of human resources and technology to boost socioeconomic conditions and encourage people to think about protecting their natural environments and cultural heritage, which are what drive tourism. Therefore, it can be advised based on the findings of this study that the best possible use of environmental resources, the preservation of vital ecological processes, and the preservation of natural heritage and biodiversity are the necessary components of sustainable tourism development. The importance of upholding the sociocultural authenticity of host communities to preserve their traditional values and built and living cultural heritage and advance intercultural tolerance. Socio-economic advantages are crucial for all stakeholders and must be fairly distributed in terms of steady employment, income-earning opportunities, and social services to host communities, which are aiding in the reduction of poverty, to sustain viable, long-term economic operations. Thus, from an economic, sociocultural, and environmental perspective, the widespread adoption of technology in the tourism and hospitality sector can help fulfill all the sustainable development goals.

Keywords: digitalization, sustainability, tourism and hospitality

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Introduction

In its broadest sense, digitization describes the process of turning analog information into digital data. By improving corporate processes with the aid of digitised data and information, digitalization increases the effectiveness of work. The government of India is currently focusing on the digitalization of business and the economy (Raj & Aithal, 2018). The goals of programmes like Digital India are to encourage the use of technological tools in the economy to boost productivity and increase efficiency. The government has taken steps to shift the paradigm to capitalise on the benefits of digitization by making digital payments more appealing to reduce the economy's reliance on cash during the demonetization period. These steps include lowering service fees for digital payments, enabling application-based work for services like Aadhaar enrollment, passport applications, filing and verifying income tax returns, and enabling Aadhaar enrollment.

The tourism and hospitality sector is one of the industries that has been at the forefront of digitalization and is continually undergoing exponential development. The government has been focused on digitization since 2014. It has been noted that the growth of the tourism and hospitality industries not only wears the natural attractions to encourage tourism but also strengthens a country's economy (foreign exchange earnings). The tourism industry has adopted digitalization and mixed it with itself to generate new tourism routes as well as methods to boost visitor happiness. When discussing digitalization in tourism, it is commonly considered that it is limited to online hotel booking and digital payments. To stimulate travellers, a brand-new product called virtual tourism has just been developed and is becoming more and more popular in India. Numerous hospitality businesses have increased their involvement in digital marketing initiatives as a result of how important visitor participation in online activities is for commercial purposes. One of the most important business improvement areas in the hotel industry that appears essential to compete and even survive in a highly competitive sector is the use of digitalization in the tourism sector. Digitalization has emerged as a competitive advantage for a variety of stakeholders. Many businesses have tried to use it to improve their competitive capacities.

Literature Review

The development of the tourism industry depends on the integration of information and communication technology (ICT), and the effects of ICT on the industry have been extensively researched (Lee et. al, 2021). Fast information diffusion, decreased distance between nations, and enhanced transparency are some of the advantages of ICT for the tourism industry. Hojeghan and Esfangareh (2011) investigated how the digital economy is affecting the travel and tourism sector. The study emphasised how technology was adopted by businesses like airlines, hotels, auto rentals, and tour and travel operators, which led to a change in how they conducted business. According to the survey, standards need to be established for the industry's successful adoption of digitalization. According to Milovic (2012), the growth of digitalization in the hospitality industry has led to the emergence of electronic client relationships. The study examined how websites, social media, and other electronic marketing activities affected hotel promotion and financial results. The effects of ICT on the productivity and competitiveness of the travel agency firm were examined by Elena & Lopez in 2013. The study concluded that while digitization has less of an influence on productivity and competitiveness, it has nevertheless revolutionised challenges for near-field communications in the tourism sector. To help the industry adapt to new technology, the paper suggested utilising consistent business structures together with push and pull market strategies. Chang and Jang (2014) looked at how young, educated people utilise their mobile

phones to use smartphone booking services. The study concluded that price level, relative advantage, and complexity had a big impact on smartphone booking. Tsokota et al. (2014) investigated how information and communication technology is being used and used in Zimbabwe's tourism industry. The study found that some of the barriers to technology adoption in the tourism industry include a lack of government policy, ICT regulation, intermittent network supply, and organisational commitment. The report recommended that a national strategy be put into place to spread technology in the tourism industry. According to Bilghan and Nejad (2015), the development of many industrialised economies has been significantly influenced by the service sector. One of the trends identified by the survey was the sharing economy, which has become more prevalent in the hospitality industry as a result of innovation brought about by digitalization. The survey also makes the point that consumers are now wanting greater digitization. Jaremen (2016) talked about how ICT is used in the hospitality sector, notably in the hotel sector. ICT should be used in hotels, according to the study, to improve service. The need for finance was also seen as a significant obstacle to ICT implementation in the hotel business. According to the Maráková and Medveová (2016) Report, the European tourism industry's market actors have been compelled to innovate both in terms of their products and how they serve their clients due to the decline in tourists, their average stay times, and sales. The study's findings suggest that additional investigation into innovation in the tourist and hospitality industries is necessary. In addition, the policies should concentrate on middle and small-scale businesses in the tourism sector.

Specifically, Rajamohamed (2016) examined the function and significance of ICT and its effects on the travel and tourism sector. The purpose of the study was to ascertain how ICT impacts the hospitality industry and managers' perspectives on ICT's place in the travel and hospitality sectors. Through the use of case studies, Alexis (2017) investigated the effects of automation and digitization on the travel and tourist sectors. The research recommended that stakeholders embrace digitalization rather than fight it. This would improve consumer satisfaction and create new opportunities for related future research. Dhingra (2017) examined the effects of the digital revolution on the tourist sector through initiatives like Digital India and outlined the advantages that the sector has benefited from. Digitalization has changed the way people travel by offering advantages including simpler payment systems, better-informed travel decisions, and the development of new-age travel trends. In their 2017 study, Greenwood and Quinn looked into the impact of digital forgetfulness on potential tourists. The study found that travellers' decision-making, interactions with marketers, and memories of their travel experiences are all impacted by digitization. Tourism organisations now put more of a focus on organising activities that involve more digital tools due to the growing effect of tourists using internet-based facilities for their purchase behaviours. The travel and tourism industries now mostly rely on the Internet. Because of this, businesses are now developing their marketing strategies with a stronger emphasis on digital platforms. The internet has grown in significance for the tourist industry because it connects people's interests in visiting other places and cultures with their ability to easily search for and reserve a variety of services and goods. The present tourist business is divided into several distinct divisions, most of which revolve around lodging, food, and beverage consumption. With the growth of the environment in which we currently reside, the tourist industry has evolved into a more commercialised activity where clients pay with a bill for the goods and services they use at a lodging establishment. In comparison to other industries around the world, the tourism sector is regarded as a vast industry. Many specialised enterprises focusing on customer satisfaction and recreational demands are created as a result of the use of tourism accommodations. Since this industry is mostly dependent on supplying clients with luxury services, the major factor driving its

continued growth is focusing on customer satisfaction and giving them what they need (Broman, 2016).

An empirical study was carried out in Germany by Härting et al. (2017) to determine what advantages digitalization might have for the travel and tourism sector. The study also covered the progress made by the tourism sector in terms of digitalization and what still needs to be done. With the aid of the structural equation modelling technique, the study also determined the primary forces driving digitalization in the travel and tourism sector. According to reports from Dubbudu (2016), booking a ticket on the IRCTC website is thought to take about 35 seconds. Dubbudu (2016), a Government Report, states that around 60% of ticket reservations are made online, which has boosted the overall number of tickets sold. Additionally, the ability to check in online guarantees time savings and removes the stress of arriving early at the airport. One receives a lot of offers every day from websites like Yatra.com, Make my trip, or even food delivery services like Swiggy and Zomato. The companies can give these offers to tourists because of digitalization, and they are tailored. Digitalization has had a significant impact on the nascent opportunities in niche tourism. An app for finding restaurants and hotels called Zomato offers a list of renowned eateries that includes the most well-known and established restaurants in the neighbourhood. Similar to Swiggy, UberEats, and Foodpanda, several apps have altered how we get meals (Bhattacharya, 2019). A traveller may learn about the ambiance, food, and staff service of any restaurant with just a touch of their fingertips. For tiny, real food businesses that can't spend much on marketing, this is particularly beneficial. The hotel sector now has a way to give information to visitors rather than just collecting it from them thanks to digitalization.

According to UN Secretary-General Antonio Guterres, "Tourism is a vital pillar for the conservation of natural and cultural assets." As more regions and countries develop their tourism industries, these locations will therefore see significant effects on their natural resources, consumption habits, pollution levels, and social systems. The expansion of tourism has recently been linked to negative environmental effects, including the depletion of natural resources and biodiversity (Kim et al., 2020). We are seeing more and more instances of this around the world. Some places have gone one step further and imposed limits on the number of tourists who can visit there at any given moment. For instance, the Philippines' Boracay Island has been off-limits to visitors for the past two years to recuperate from the detrimental environmental effects of previous tourism (Canoy et al., 2020). While tourism can create a variety of forms of money that can benefit the host nation, its growth severely exploits residents, natural resources, and cultural traditions (Grilli et al., 2021; Simionescu et al., 2020; Zheng et al., 2020). Since tourism can promote nature conservation, albeit to varying degrees, it is crucial to assess how it affects the environment as the business develops as a whole. Therefore, it is important to consider the social, economic, sustainable, and cultural effects of tourism.

"Sustainable Tourism and Hospitality Management" has thus become the new catchphrase for travel industry players to achieve a harmonious balance between the three aspects of tourist development—the environmental, the economic, and the social ones. The long-term survival of the tourism business is sought after via this delicate balancing act. Being sustainable requires us to consider how our actions will impact both the environment and people's social and economic well-being. So the basis of sustainable tourism is social justice, environmental integrity, and economic growth. This essay's major goal is to determine how digitization affects environmentally friendly travel and hospitality. The article also aims to discuss the effects of digitization on different tourism sector players.

Methodology

To generate trustworthy results, the researcher must use the best research process. The identification of key criteria for methodology, including study goals, sample size, population size, and data collecting and analysis techniques, is necessary. Customer service is essential to the tourism sector. Digital marketing raises consumer awareness of brands. Tourists are people who are interested in technology, and they simply surf the internet for what they need. Maintaining an online marketing strategy is crucial for gaining a competitive edge and luring clients. Because this study predicts the association between dependent and independent variables, it is regarded as a sort of predictive research. Digitalization is the study's independent variable, and sustainable tourism and hospitality are its dependent variables.

The study's total population is made up of visitors to Delhi, workers of the planning authority and travel companies, and proprietors of hotels and restaurants in the Delhi and NCR region. Two hundred respondents in all were used in this investigation (50 tourists, 50 from the planning authority, 50 travel agencies, and 50 hotel and restaurant owners). Convenient sampling, a sort of non-probability sampling in which respondents were chosen based on convenience, was used to gather responses from respondents. In this inquiry, both primary and secondary data are utilized. Previous studies on the subject, published government reports, newspaper stories, online publications, and journal papers are some examples of secondary data sources. A questionnaire with closed-ended questions mostly uses a five-point Likert scale and a two-point Likert scale is used to gather the primary data (few questions). Using the statistical tools SPSS 21 and Microsoft Excel, descriptive analysis and correlation analysis were conducted to reach the desired conclusions. Different analysis techniques are employed depending on the purpose, and the tables given (Table 1 and Table 2) list these techniques for each of the study's objectives.

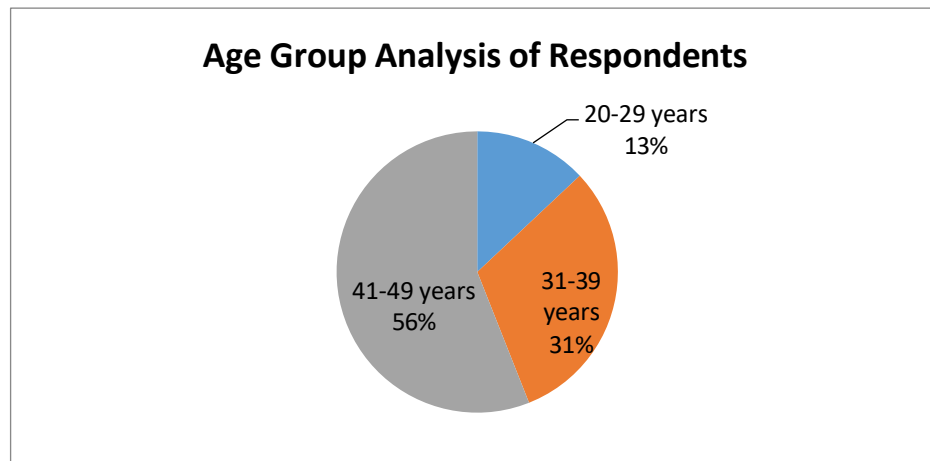
Results and Discussion

200 people were given the questionnaires, and information was gathered based on their answers. The demographic characteristics of the respondents are shown in the following study in terms of percentages.

Age Group Analysis of Respondents

200 people were surveyed, and 56 percent of them were in the 40–49 age range. The remaining 44% is split between the age groups of 30-39 and 20-29, with percentages of 31% and 13%, respectively. 87% of the responders are 30 years of age or older. It's important to note that responders who are 50 years of age or older are not included (Figure 1).

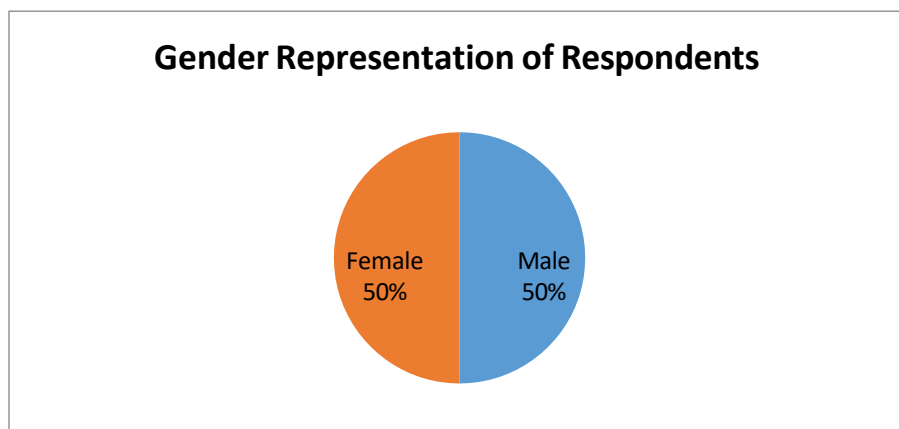
Figure 1: Age Group Analysis of Respondents.



Gender Representation of Respondents

There are roughly equal numbers of men and women in the total respondents base. As shown in the graph, each gender is equally represented at 50%. Due to the respondents' base's equal gender distribution, the results are gender-neutral in the context that has been chosen (Figure 2).

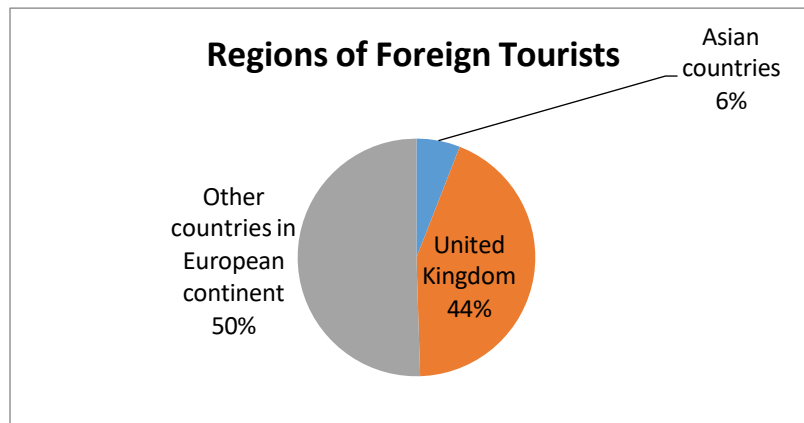
Figure 2: Gender Representation of Respondents.



Regions of Foreign Tourists

Below is a pie chart that shows how tourists are represented by region. According to the data, only 6 percent, or 3 responders, or the lowest percentage of visitors have come from Asian nations. 44 percent of responders were tourists from the United Kingdom, and the remaining 51 percent were mostly from other European nations. The pie chart shows that 44% of respondents were from the United Kingdom, which is a sizable percentage (Figure 3).

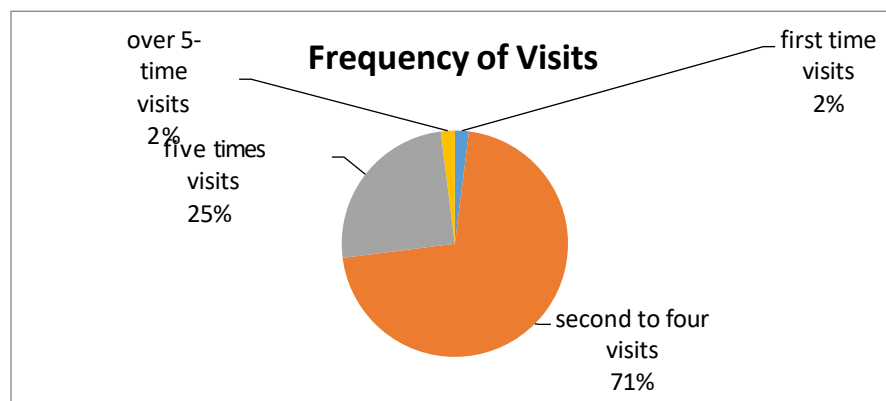
Figure 3: Regions of Foreign Tourists



Frequency of Visits

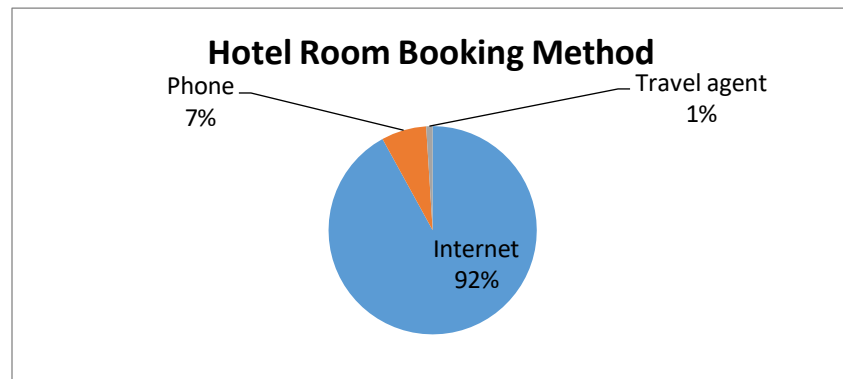
The number of visitors to the Delhi and NCR region is depicted in the pie chart. According to the graph, 71% of visitors say that this is their second to fourth time visiting the Delhi and NCR region. First-time visitors and winners who have won more than five times each claim two percent (Figure 4).

Figure 4: Frequency of Visits



Hotel Room Booking Method

According to an analysis of hotel visitors' reservation methods, 92% of them used the internet to make their reservations. This demonstrates unequivocally the use of digital sources for reservations. A significant indicator of the dominance of online booking can be seen when taking into account that just 7% and 1% of reservations are made via phone and travel agents, respectively. From a different angle, this suggests that customers are more likely to rely on the company's website to complete their appointments (Figure 6).

Figure 5: Hotel Room Booking Method

Digitalization and Stakeholders

According to an evaluation of digitalization and tourism and hospitality stakeholders based on their demands, 70 percent (on average 35 from each group of 50) believe that digitalization benefits all stakeholders. According to the results of a student t-test, digitization considerably ($p < 0.05$) benefited all stakeholders following their needs (Figure 6). 92 percent of tourists use the internet; thus, it also aids them in locating the right location to enjoy themselves (Figure 5). Table 1 showed that YouTube videos, social media advertising from hotels, travel agencies, and tourism planning authorities of various nations and states significantly ($p < 0.05$) aided travelers in selecting their travel location. Travelers can choose hotels based on their budget and the amenities they offer by reading reviews left by other travelers on social media and the hotel website, which are also significantly ($p < 0.05$) helpful. In a similar vein, digitalization significantly ($p < 0.05$) aids proprietors of hotels, restaurants, and travel agencies in luring customers. The findings also imply that as the use of digital tools grows, less conventional destinations may overcome the lack of knowledge and interest among international travelers, reduce travel expenses, and hence draw more tourists (Lopez-Cordova, 2020).

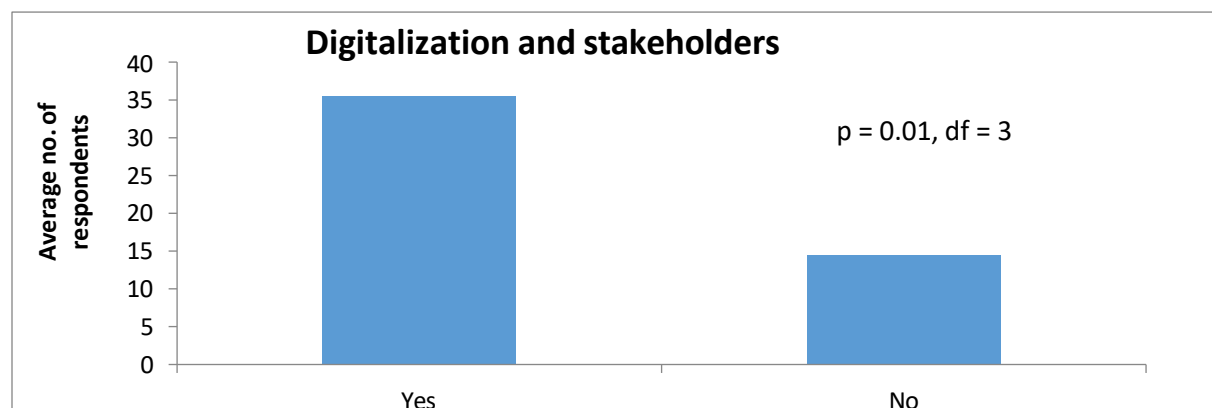
Figure 6: Digitalization and Stakeholders of Tourism and Hospitality.

Table 1: Student t-test for Variables like (A) YouTube Videos and Tourist Destinations, (B) Reviews from other Tourists and Selection of the Hotels, and (C) Digitalization and Attracting Tourists.

	(A) YouTube videos, promotions and tourist destination		(B) Reviews from other tourists and selection of the hotels		(C) Digitalization and attracting tourist	
	Yes	No	Yes	No	Yes	No
Mean	36.5	13.5	39.25	10.75	38.5	13.5
Variance	9.666667	9.666667	2.25	2.25	3	9.666667
Observations	4	4	4	4	4	4
Pearson Correlation	-1		-1		0.742781	
Hypothesized Mean Difference	0		0		0	
df	3		3		3	
t Stat	7.397576		19		23.1455	
P(T<=t) one-tail	0.002555		0.000159		8.83E-05	
t Critical one-tail	2.353363		2.353363		2.353363	
P(T<=t) two-tail	0.005109		0.000318		0.000177	
t Critical two-tail	3.182446		3.182446		3.182446	

Correlation Analysis

The association between the four factors—digitalization, tourism, the financial health of hotels and travel agencies, natural ecology, and cultural heritage—is displayed in Table 2 below. All of the factors have a very good association with one another. Digitalization significantly improves their approach to attracting new tourists, which has a positive impact on their economy and provided them with the opportunity to pay their staff well, offer them permanent jobs, and provide them with adequate free time. By enabling their staff to maintain a healthy work-life balance, these changes have improved the socioeconomic conditions of hotel and travel agency employees. In addition, when the economy of hotels and tourism companies improves, they raise their investments in safeguarding the local environment and cultural heritage. Tourism is always significantly ($p < 0.001$) attracted by natural ecosystems and history. The shift to green tourism has been helped by the digital revolution (Furqan et al., 2010). In general, green tourism refers to a traveler's consideration for the environment or the provision of environmentally friendly services to tourists. 2007 (Budeanu). The dissemination of best practices in the field, the promotion of

sustainable development goals within the tourism and hospitality sector, and the prevalence of information on the dimensions of sustainable development in tourism are all made possible by digital tools (such as social media, chatbots, and digital assistants).

Table 2: Correlation Analysis between factors such as Digitalization, Tourism, the Economic Condition of Hotels and Travel Agencies, Natural Ecology and Heritage.

		Digitalization	Tourism	The economic condition of hotels and travel agencies	Natural ecology and heritage
Digitalization	Pearson Correlation	1	0.941	0.932	0.841
	Sig. (2-tailed)		0	0	0
	N	200	200	200	200
Tourism	Pearson Correlation	0.901	1	0.899	0.878
	Sig. (2-tailed)	0		0	0
	N	200	200	200	200
The economic condition of hotels and travel agencies	Pearson Correlation	0.976	0.931	1	0.861
	Sig. (2-tailed)	0	0		0
	N	200	200	200	200
Natural ecology and heritage	Pearson Correlation	0.963	0.874	0.892	1
	Sig. (2-tailed)	0	0	0	
	N	200	200	200	200

Conclusion

There is no disputing the importance of tourism as a driver of economic development, and digitization has the potential to boost tourism productivity. Many studies support the positive effects of digitalization on tourism in general, but there aren't as many that specifically examine how this influence affects sustainable tourism. There are numerous effects of digitalization on Tourism and Hospitality management and ample scope for future research also. The usage of the Internet helps tourism increase its market share in online trading. But also promote more eco-friendly consumer habits. The findings indicated that digitalization benefits all stakeholders following their requirements. It assists visitors in locating an enjoyable location that meets their needs. They are assisted in choosing their holiday destination by YouTube videos, and advertisements from tourism planning authorities, hotels, and travel firms from many nations and

states. Travellers can choose hotels based on their budget and the amenities they offer by reading reviews from other travellers on social media and on the hotel website. In a similar vein, digitalization aids proprietors of hotels, restaurants, and travel agencies in luring customers. Digitalization significantly improves their approach to attracting new tourists, which has a positive impact on their economy and provided them with the opportunity to pay their staff well, offer them permanent jobs, and provide them with adequate free time. By enabling their staff to maintain a healthy work-life balance, these changes have improved the socio-economic conditions of hotel and travel agency employees. In addition, when the economy of hotels and tourism companies improves, they raise their investments in safeguarding the local environment and cultural heritage. Tourism is constantly drawn to the natural world and cultural treasures. It follows that other participants in the tourism and hospitality sectors adopt digitization at the same rate as tourists, providing them a competitive advantage over their rivals. By using digital tools to create more individualised products, the sector would depart from conventional bookings. This would further stimulate digitalization across all industries. Other stakeholders' digital participation will rise as a result of tourists using digitalization, their usage of social media platforms, and the necessity to maintain relationships with tourists. Additionally, profitable and more specialised offers will be built on the strength of favourable client reviews and comments. Customer feedback would assist companies in gaining new customers by attesting to the truth of claims made by interested parties. Making the best use of human resources and technology to improve socio-economic conditions and inspire people to think about maintaining their natural ecosystems and cultural heritage, which are what drive tourism, is the key to effective digitalization. Therefore, it can be suggested based on the results of this study that the preservation of natural heritage, biodiversity, and the best possible use of environmental resources are essential elements of sustainable tourism development, preserving the sociocultural authenticity of host communities to protect their traditional values, preserve they are built and lived cultural heritage, and promote intercultural tolerance. To sustain effective, long-term economic operations, socio-economic benefits must be fairly delivered in the form of stable employment, income-earning possibilities, and social services to host communities that are assisting in the eradication of poverty. Therefore, the widespread adoption of technology in the tourist and hospitality sector can assist in achieving all the sustainable development goals from an economic, sociocultural, and environmental perspective.

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