

# Strategic E-Value Co-creation through Virtual Reality in the Travel and Tourism Industry of India

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## ABSTRACT

The current need in the travel and tourism industry is to increase the number of walk-ins and drive continuous innovations, focusing on the cocreation of enhanced Virtual Reality (VR) experiences in developing countries. This study analyzed the use of VR in the Indian travel and tourism industry and the perspectives of travelers and travel operators regarding the use of VR as a marketing tool. This study also explores how its applications can enhance customer satisfaction and provide strategic e-value to the Indian travel and tourism industry. The methodology used consisted of a quantitative approach with a systematic literature review in the field of VR, and augmented reality, and an analysis of data collected from two sample groups: travel operators and tourists. The primary data were analyzed using cross-tabs and structural equation modeling. It was noted that the VR trend in the Indian tourism industry is still in its infancy, and the proposed stakeholder engagement will aid the growth of tourism in India.

**Keywords:** Virtual Reality, Destination Marketing, Travel Agencies, Travel and Tourism Industry, Cultural Shock

## Introduction

The use of the internet and technology-based tools has become essential in the daily life of every individual (Erdem et al., 2023). The term Virtual Reality (VR) was first mentioned by playwright Antonin Artaud in his book “Theater and its Double,” in which he wrote about the illusory nature created by characters and objects in theater (Grimes, 2012). In short, VR is an advanced 3D visual interactive software that provides users with an immersive experience. The device is attached to a helmet or individually equipped with a digital screen, gloves with sensors, and portable joysticks that act as necessary gadgets for customers in specific scenes (Woodford, 2020). Currently, VR can be experienced in the comfort of your home with companies offering VR-enabled website services that can be viewed through desktops, laptops, and smartphones.

Strategic value is the creation of business value by selling unique travel experiences. (Penfold, 2009). The strategic value created by VR can be measured by the “self-presence” factor. Self-presence can be defined as a tourist’s emotional state and interaction with the environment in a particular location. It has a multidimensional cultural influence on the perception of a specific destination. The positive and creative influence of VR and its 360-degree technologies created by the interactive web increases the value of the intention to visit a destination.

According to a 2017 VR study by Touchstone, 74% of consumers rate travel as their preferred choice for VR content (Anastasia, 2018). With the help of external social bookmarking and reviews, travel companies made their service seem more authentic as the “consumer voices” and can reach a wider audience. Thus, when travel agencies wanted to promote their products, they tried to make the process transparent through blogging, vlogging, and Wikis. The virtual community mindset is that by using VR, the Indian travel industry can benefit from six major areas: *planning, marketing, management, entertainment, education, and accessibility and heritage preservation*. (Daniel, 2010).

## Research Gaps and Need for the Study

There has been no significant study regarding VR application in the Indian tourism industry. Thus, the gap analyzed in this study shows a growing need to innovate the tourism industry in India with a focus on VR experiences. Currently, customers want to pay for a *service experience* rather than just booking a tour package (Site, 2020). This study analyzed the perspective of travelers and

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private tourism companies regarding the use of VR in India and determined the role of VR applications in improving customer satisfaction and adding strategic value to the Indian travel and tourism industry.

## **Critical Literature Review**

### **Virtual Reality Use for Information**

The availability of interpretative media is effective in improving tourists' understanding and appreciation of the destination being visited (Justus et al., 2018). This study revealed that information technology is most commonly used in the tourism and hospitality industry to meet information needs, study behavior, and performance, and manage operations and innovation processes. VR has proven to be an important information source and will greatly benefit the tourism industry (Pestek and Maida, 2021).

A current trend in tourism research involves the application of VR and travel videos in mobile phone apps for marketing. Among these, VR is the most novel and modern marketing method (Li-Pin et al., 2020). Many VR companies have collaborated with educational institutions to design creatives for ecofriendly resorts and islands. Students are required to watch VR simulations of the effects of global warming and sensitive coastal tourist locations experiencing rising sea levels (Paul P et al., 2008).

### **Virtual Reality Use for Cultural Information**

Technology-nurtured cultures, such as community cultures in cyberspace, have a new set of symbols and interaction rituals that mutually construct their meanings (Amir et al., 2014). VR is a millennial technology that can bring new changes to the tourism industry (Tussyadiah et al., 2017). Using social media and VR to train in language proficiency, destination information, and cultural interactions can help reduce fear and prevent travelers from having to order a bolt ride out of the blue (Made et al., 2018).

### **Virtual Reality and Augmented Reality in Marketing**

The telepresence components create a major impact while creating valuable engagement for the travel and tourism industry. 3D environments have significantly improved customer experience, engagement, and satisfaction (Savvas, 2016). AR and VR marketing have played a major role in operational usability. Travel agencies that have unaided means of technology use had the highest number of customers dissatisfied with the technology. Thus, customization involves personal guidance as a contributing factor when promoting tourist destinations through these technologies (Ryan et al., 2017). The customer immersion level created by VR helps in the acceptance of the digital system. (Peter et al., 2017).

A digital tourism system consists of at least two parts: digitization of travel experiences and tourism management. By applying improved algorithms, improved scene entities (trees, buildings, etc.), and improved display accuracy and speed, the scene becomes more realistic and creates an avenue for real-time interaction to achieve the desired effect (Liu et al., 2017). B promoting cultural festivals for tourists, countries can use Augmented Reality (AR) to provide esthetics, education, entertainment, satisfaction, and engagement of festival visitors (Olya et al., 2018).

The use of VR can provide future tourists with more reliable, faster, and more interactive information, thereby influencing their information search and decision-making processes. This type of information makes it possible to experience a destination in advance and create realistic expectations about the location (Rainoldi et al., 2018). VR can be used as an important means in the early stages of tourist attraction to venture into new markets or as a tool to enhance the pretrip experience (Tom et al., 2018). There are three forms of using VR. One is immersive VR, which is a method in which customers use a VR headset that is preinstalled with a simulation of the destinations and other experiences based on the products the companies are selling. The next form is semi-immersive VR. This method involves projecting VR from a real-life captured destination, which is then projected on large screens, walls, and sometimes floors of a room, engaging the customer in a multienvironment virtual touristic experience. The final form is nonimmersive VR. There are VR-enabled websites and videos on platforms such as YouTube. VR can help customers plan and manage their trips. Companies benefit through their capability of marketing, information, entertainment, education, and access and culture exchange (Beck et al., 2019).

VR and AR can integrate human perception and can be used as examples of state-of-the-art technologies (Neuburger et al., 2018). Customization approach and mass acceptance might see companies automatically adopting and investing heavily in cutting-edge (Urquhart, 2019). The heritage industry is trying to build brands through the gaming, TV, and film industries (Liestol et al., 2019). VR and AR further evolved from Web 2.0 to 5.0 to provide immersive experiences to customers (Varnajot, 2019). VR and AR are twin technologies that stimulate a reality preview. VR and AR are used in the tourism context to improve the tourist experience (Moro et al., 2019). VR and AR greatly benefit tourism spots, destinations, and tourism professionals by providing information that can be organized and transmitted in large social networks (Wei Wei, 2019). VR attracts marketers because it can be used

to explore and actively shape posterity, cocreate value with consumers, and develop consumer-brand engagement (Cowan et al., 2019). Customers continue to purchase hotel and flight tickets from online travel booking sites by observing their service quality (Bambang et al., 2020). The collaborative economy is essential in the tourism ecosystem (Iis et al., 2018) through its omnichannel strategies that help achieve strategic customer relationship value (Capriello and Riboldazzi, 2021).

This critical literature review provided the authors with a significant foundation for the following statement hypothesis:

**H<sub>0</sub>:** VR does not add significant strategic e-value to the Indian travel and tourism industry.

**H<sub>a</sub>:** VR adds significant strategic e-value to the Indian travel and tourism industry.

## Methodology

The purpose of this study was to analyze the use of VR in the Indian travel and tourism industry. To determine the perspectives of travelers and travel agencies regarding the use of VR as a marketing tool, and to determine the strategic e-value of using VR as a tool. The research approach adopted in this study was a descriptive study that conducted a systematic literature review in the field of VR, Web 2.0, and AR and a quantitative approach that aggregated data collected through questionnaires with the help of the following mediums: online survey and observations. The questionnaires were structured based on the identified variables for two respondent groups: travel operators and travelers. The sample size collected for travel operators was 51 and 286 for travelers, respectively. The sampling method used was probability sampling. The authors used five common variables for travel operators and travelers: marketing, personalized service, self-presence, visit intention, and cultural knowledge. These are equated using the structural equation model shown below. Statistical analysis was used to determine the exact data and hypotheses. The primary data collected through questionnaires were analyzed using cross-tabs, and SEM models. The questionnaire for the survey was self-designed and coded, and the questionnaires were sent personally via email, LinkedIn, Facebook, and WhatsApp. The sample size collected for travel operators was 51 and 286 for travelers, respectively.

## Findings and Discussion

The data collected was coded and analyzed as given below:

Table 1 shows that private company employees traveled more frequently than other travelers. This can be helpful for travel operators as information communication technology, as VR technologies are more accessible to private company employees. Thus, marketing to them with VR can be beneficial, as they will better understand the features of the technology.

**Table 1.** Cross Tabs of Traveler's Occupation Status and Frequency of Travel

Occupation Status	How often do you travel?					
	Once a Week	Once a month	Once in three months	Once in Six months	Twice a year	Once a year
Government Employee	0	0	8	7	26	2
Homemaker	0	0	0	4	14	2
Interning	0	0	1	0	1	0
Private Company	0	2	26	13	49	3
Retired	0	0	5	8	17	7
Self Employed/Freelance	0	0	10	3	14	1
Student	1	3	17	7	22	4
Unemployed	0	0	0	0	4	1

Table 2 shows that 99.7% of travelers stated that they did not receive VR gadgets from hotels and 99.3% did not receive any VR gadgets from travel and tourism companies.

**Table 2.** *Travelers' Technological Use of Interactive Web and VR*

Factors	Category	Frequency	Percentage
Interactive Web	Government tourism portals	170 (No)	59.4%
		116 (Yes)	40.6%
	Online tourism review sites	80 (No)	28.0%
		206 (Yes)	72.0%
	Social Media advertisements	87 (No)	30.4%
		199 (Yes)	69.6%
	Word of Mouth(Family and friends)	50 (No)	17.5%
		236 (Yes)	82.5%
	Print Media (newspapers, brochures)	49 (No)	17.1%
		237 (Yes)	82.9%
	Online Print Media( e-brochures, e fliers)	107 (No)	37.4%
		179 (Yes)	62.6%
VR	VR tools provided by hotels (Oculus Rift, Samsung Gear)	285 (No)	99.7%
		1 (Yes)	.3%
	VR tools provided by travel and tourism companies (Oculus Rift, Samsung Gear)	284 (No)	99.3%
		2 (Yes)	.7%

Table 3 shows that in response to Question 1, 75.17% (215) of the respondents agreed that VR tools on company websites help them in selling their products. Question 2 shows that 76.57% (219) of the respondents agreed that VR marketing enables travel and tourism companies to place their brand image closer to their customers. For Question 3, 60.48% (173) of the respondents felt that value in the tourism industry can be created from the use of interactive web features. Finally, under Question 4, 16.08% (46) of respondents felt that travel operators in India view VR as a tool for good marketing. From the customer's perspective, the travel industry in India is not considering VR as a great tool for enhancing customer relations and business value.

**Table 3.** *Traveler's View of VR As A Marketing Tool*

Question No.	Response	Review Process	Percentage
1.	VR tools on company websites help in selling their products	215	75.17%
2.	VR marketing enables travel and tourism companies to place their brand image closer to their customers	219	76.57%
3.	Value in the tourism industry can be created from the use of interactive web features.	173	60.48%
4.	Travel Operators in India view VR as a tool for good marketing	46	16.08%

Table 4 shows that travel operators in India rely heavily on interactive web applications, although customers feel that travel companies can sell products better and gain profits through the use of VR. From the seven various applications in Web 2.0 provided by travel agencies, it is observed that features such as company's websites with interactive chat options such as Instagram, YouTube Blogs, Facebook, Storytelling pages, and personal Apps are all used extensively by the industry. However, regarding the use of VR gadgets and VR content, 98% and 94.1% of travel operators stated that they do not provide these tools.

**Table 4.** *Company's Use of an Interactive Web and VR*

Factors	Category	Frequency	Percentage
<b>Interactive Web</b>	Company websites with interactive chat options	100 (Yes)	100%
	Company Blog page	100 (Yes)	100%
	Company Facebook page	100 (Yes)	100%
	Company Instagram Page	100 (Yes)	100%
	Company YouTube page	100 (Yes)	100%
	Company Digital Storytelling Page	13.7(No)	13.7%
		86.3(Yes)	86.3%
	Company App	1 (No)	2.0 %
		50 (Yes)	98.0 %
<b>VR</b>	VR gadgets for customers	50(No)	98.0%
		1(Yes)	2.0%
	VR content on websites	48(No)	94.1%
		3(Yes)	5.9%

Table 5 that an aggregate of 96.9% of company respondents have identified VR as a good marketing tool for the travel and tourism industry in India. Under sub-question 1, 98% (50) of the respondents agreed that VR tools on company websites enhance the sale of their products. Under sub-question 2, 98% (50) of the respondents agreed that VR marketing enables travel and tourism companies to place their brand image closer to their customers. In sub-question 3, 80% (41) of respondents feel that value in the tourism industry can be created from the use of interactive web features. Finally, in sub-question 4, 80% (41) of the respondents believe that travel companies in India consider VR as a good marketing tool. In conclusion, the Indian travel industry sees VR as a great tool to improve customer relationships and business value.

**Table 5.** *Company Response for VR As A Marketing Tool*

<u>Response</u>	<u>Review Process</u>
VR tools on company websites help in selling their products	50
VR marketing enables travel and tourism companies to place their brand image closer to their customers	50
Value in the tourism industry can be created from the use of Web 2.0.	41
Travel Operators in India view VR as a tool for good marketing	41



Structural Equation Modeling for the

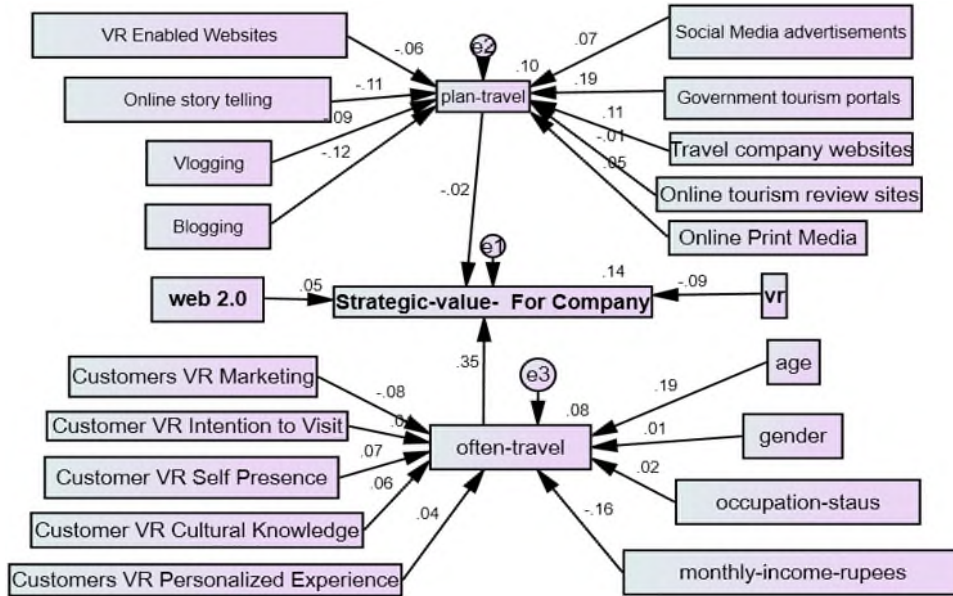


Figure 1. Strategic E-Value of a Company

Structural Equation Modeling (SME) for strategic e-value, as shown in Fig. 1, reveals that travelers’ responses for planning their travel had a positive and high covariance relationship between Social Media Advertisements (.07), Government Tourism Portals (.19), Travel Company Websites (.11), and Online Print Media (.05). However, the covariance relationship between Customer VR Marketing (Travel operators in India view VR as a potential marketing tool) (-.08), Customer VR Intention to Visit (Purchasing products through Virtual Environments is higher) (.04), Customer VR Self Presence (Self-presence through VR gives the confidence to travel and avoids cultural shocks) (.07), Customer VR Cultural Knowledge (VR enables cultural interaction) (.06), and Customer Personalized Experience (Engaging customers with content provides value to the product) (.04) has a negative and low covariance relationship with Strategic Value as compared with Web 2.0 (.05) and its applications.

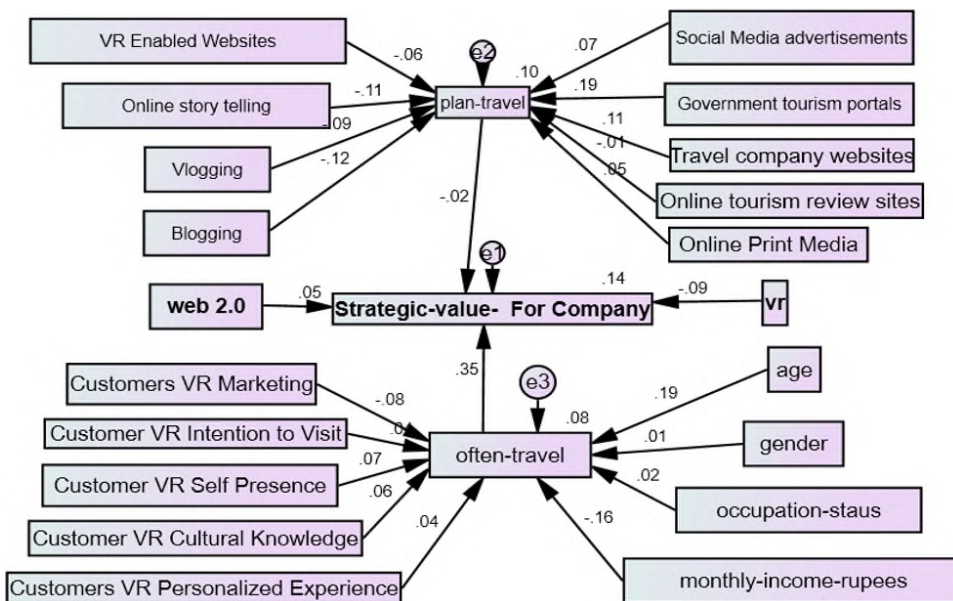


Figure 2. SEM Model for Strategic e-value of company

**Hypothesis**

In this study, the authors have formulated the following hypothesis:

**H<sub>0</sub>**: VR does not add significant strategic e-value to the Indian travel and tourism industry.

**H<sub>a</sub>**: VR adds significant strategic e-value to the Indian travel and tourism industry.

Cross-tab analysis was conducted between the identified variables from the views of the customers and travel operators.

Table 6 shows that 71.2 % (203) agree that Perceived\_Value the desire to buy products through virtual environments is higher and a Virtual Experience leads to an actual purchase intention.

**Table 6.** Cross-tab Analysis of Actual Purchase Intention and Perceived Value by Customers

		PERCEIVED_VALUE			
		STRONGLY AGREE	AGREE	NEUTRAL	DISAGREE
ACTUAL PURCHASE INTENTION	STRONGLY AGREE	123	17	4	2
	AGREE	17	46	0	0
	NEUTRAL	9	0	51	0
	DISAGREE	1	0	5	5
	STRONGLY DISAGREE	0	0	2	1
Total		150	63	62	8

Table 7 shows that the significance value between Perceived Value- Desire to buy products through virtual environments and a Virtual Experience will lead to an actual purchase intention is less than 0.005. As the value proves to be significant, it proves that customers believe that VR experiences provide them with more confidence in purchase and provide awareness concerning the place, which minimizes the cultural shocks of unknown locations.

**Table 7.** Chi-Square Test for Actual Purchase Intention and Perceived Value by Customers

Chi-Square Test			
	Value	Df	Asymp. Sig. (2-sided)
Pearson Chi-Square	459.533 <sup>a</sup>	16	.000
Likelihood Ratio	324.054	16	.000
Linear-by-Linear Association	162.009	1	.000
N of Valid Cases	284		

Table 8 shows that 76.4% (39) of company respondents agreed that travel operators in India view VR as a potential marketing tool and that strategic value can be created by selling unique travel experiences.

**Table 8.** Cross-tab Analysis Between Strategic Value and Marketing for Travel Operators

		MARKETING_4			Total
		STRONGLY AGREE	AGREE	STRONGLY DISAGREE	
STRATEGIC VALUE	UNIQUE TRAVEL EXPERIENCE	11	28	2	41
	INTER WITH ENVIRON	7	3	0	10
Total		18	31	2	51

Table 9 shows that the significant value between travel operators viewing VR as a potential marketing tool and the strategic value that can be created by selling unique travel experiences has a p-value of  $p = .036$ . This is slightly higher than the significance value of  $p = 0.005$ . As the value is not very significant, it proves that there is still a small percentage of travel operators that have not adopted VR into their operations since they could not generate enough seed capital and thus believe that there is no high significant value for VR in the travel and tourism industry in India.

**Table 9.** Chi-Square Test for Travel Operators

Chi-Square Tests			
	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	6.672 <sup>a</sup>	2	.036
Likelihood Ratio	6.713	2	.035
Linear-by-Linear Association	4.048	1	.044
N of Valid Cases	51		

From the chi-square test of the travelers' response, it can be interpreted that every business needs to sell a product through a unique means to gain strategic value. No business can thrive without customers; hence, the authors reject the null hypothesis and accept the alternate hypothesis **H<sub>a</sub>**: VR adds significant strategic value to the Indian travel and tourism industry.

## Conclusion

With the current state of technology, only large brands such as Marriott, Hilton, and Tirun Cruises can hone customers' buying behavior to capitalize on the cocreation of e-value experiences in developed nations. However, the authors expect technological adoption to be fast, and more user-friendly solutions will be made available to developing nations. From the data analysis of both the samples i.e., travel operators and travelers, it is evident that there is sufficient knowledge regarding VR in both groups.

- The results obtained indicate that the various factors contributing to strategic e-value to business are Print Media, Social Media Advertisements, Government Tourism Portals, and Travel Company Websites.
- Factor analysis of the Technological distribution VR indicates that there is an unequal ratio of the applications made available to customers.



- Existing VR technologies such as Oculus Rift, Play Station VR, Marriot Postcards, and 360° website technology have benefitted major players such as Marriot, Hilton, Thomas Cook, etc.
- The implementation of AR currently can help companies and their customers benefit as AR technology can be reached by a larger group of customers.

This study shows that only six Travel Operators (3%) from the sample size of 51 are providing VR Gadgets and VR content to customers during the business process. This can be further validated from the SEM model, as the observed variable VR enabled websites (-0.6) and VR Gadgets (-0.9) as provided by the travel and tourism industry to the travelers shows that they have no significance levels to the perceived value by the customers due to the absence of these technologies being provided.

As per the data reports from company marketing, it is evident that 65.3% of customer respondents have identified VR as a good marketing tool for the travel and tourism industry in India, but only 46 (16%) of respondents agree that travel operators in India view VR as an effective tool for destination marketing. The self-presence factor and cultural immersion created by VR help customers to know about the location before visiting, thus helping to minimize cultural shocks and developing destination positive image. Thus, proving that VR as a technology for the promotion of destinations is not being used effectively.

### **Limitations and Suggestions for Implications**

The study is limited to the understanding and requirement of VR applications by stakeholders. An exhaustive study on the impact of the use of VR in the travel and tourism industry will be useful to tourism companies. The area of work is limited to pan India; a universal study in this field is required for a better understanding of the implications of technology in the tourism business.

### **Practical and Social Implications**

While many of the applications of modern VR are entertainment-based, businesses are increasingly getting to grips with VR's potential as a marketing tool, delivering important information to potential customers in a way they can experience, and stimulating multiple senses in the process. The travel and tourism industry in India can use this technology efficiently through the involvement of private companies, government bodies, the tourism industry, and teaching and research institutes. The use of VR will greatly help in the revival of the tourism industry postpandemic.

VR helps in creating self-presence and cultural immersion in the minds of travelers through its pre-experience features for a place, thus helping in avoiding the cultural shock experienced during travel. Its social implications would be creating harmony among the tourists and the hosts, leading to peace-building activity through technology-enabled tourism.

Through the unique "self-presence" factor created by VR, the postpandemic market can look at repeating the importance of trying before you book/fly. In India, there are approximately 70 VR startups that enable travelers to view some of the tourism products. VR and AR are proving their worth, especially when planning, marketing, education, and tourist sport preservation come to light (Anand et al., 2018). Sensation and presence-seeking attitudes from customers have raised the intention to adopt VR for evaluating various tourist destinations (Pankaj et al., 2020). Secondly, tourism highlights a way of second "life" to destroyed or deteriorated destinations, attractions, sites, or artifacts through the use of VR and mixed reality (Alexandra et al., 2020).

Travel companies can look at "VR at home services" for postopening up to help customers come back and reduce their anxiety. The main market that VR can look into is "sustainable VR ecotourism." Currently, the focus of ecotourism is advancing the monetary benefits from tourist footfalls rather than protecting the very destination. The pre-COVID VR ecotourism measures can show customers how the environment recovered when lockdown was imposed. Contrasting scenarios of pre-COVID carbon emissions and during lockdown can be shown via VR scenarios. Future travelers will become more knowledgeable and responsible. VR tools attract tourism advertisers as they become a lucrative means of marketing to potential consumers, wherever they are located, with a realistic preview of a travel experience (Wai et al., 2020). Using VR to promote tourism can reduce the pressure created on this sector by such an epidemic and increase its sustainability (Andreea et al., 2021).

The travel and tourism industry can collaborate with the Ministry of Travel and Tourism in India and work on marketing to more domestic destinations, especially after the pandemic. It is estimated that domestic Indian travelers spend approximately eight billion dollars on international travel. If the government can provide subsidies to such forums, the travel industry can benefit immensely. Some of the VR forums engaged in VR content are:

- IVRPA- The International Virtual Reality Professionals Association
- AV Forum- Audio Visual Forum

Schools and colleges can emphasize providing incentive virtual tours for students who cannot afford to travel often, and research

scholars can look at how to provide a low-cost solution for travel operators to use VR in their operations. Future research can look at using Mixed Reality Interface Systems to create awareness among people.

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