Use of Augmented Reality in Indian Tourism

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Abstract
India is one of the well-known civilization in the world. India's contribution in medicine, science, culture and spiritual field is unique. Indian soil attracted foreign countries for many reasons like art and craft, spices, invasions to conquer.Today aviation sector became a strong network of transportation connecting and moving billions of tourist across the globe. Tourism became one the leading revenue generating sector having a share of 9.2% of Indian GDP in 2018.
This paper will put the highlight on augmented reality which is a coming up technology in western countries. How it can be used India for tourism.
Keywords: *Augmented Reality, Technology, Tourist, Tourist Industry, Tourism*

Introduction
Since 1970's applied science is evolving and helping make things better for all. Recent year's it became interactive with the help of reality based technology. Augmented reality, virtual reality and mix reality are some technologies progressed in recent years. It is now extensively used in many sectors including tourism.

1. Tourism in India
India is a diverse nation. Multiple religions, cultures, traditions, food verities, festivals makes India a exceptional country in the world. In 2018 10.56 million foreign tourist visited India. Around Rs. 1,94,892 crore foreign exchange earning was made from it. Annual growth of 9.6% is a positive indicator of foreigner's inclination to visit India. India is not a most famous tourist attraction in the world. Despite that, it was able to attract 1.24% of international tourist in 2018.
India ranks 25th in world tourist visitors. It is surprising to see 21 % foreigners who visited India were from Bangladesh, whereas 13.80% were from USA, 9.75% from UK and around 3 % from Canada, Sri Lanka and Australia.Most Foreigner tourist visited states are TamilNadu (21.0%), Maharashtra (17.6%) Utter Pradesh (13.1%). On the other hand famous states like Kerala (3.8%) Goa(3.2%) Rajasthan (6.1%) foreign tourist visited these states.

2. Types of Tourism

Tourism is considered as a 'seasonal' industry. This is true as one can enjoy ice in winter season. The countries around the world including India are making efforts to boost tourism. Indian Department of Tourismis trying overcoming this 'seasonality' issue and promoting India as 365 days destination. Department of tourism is planning to attract tourist with specific interest. This way they can increase repeated travelers for these unique types of tourism.

2.1. Cruise Tourism: India is blessed with 7000 kms of coastline and also inland waterways which carries enormous potential to develop cruise tourism.

2.2 Adventure Tourism: it involves exploration or visiting to remote and exotic places. Trekking, hiking in mountains and valleys, river rafting, are some example that can be developed in India.

2.3. Medical Tourism: It is one the leading segments of Indian tourism. Patients become tourist and cross international borders for treatment. Patients come to here for cardio, cosmetic, orthopedic, surgeries. India is one of the well known medical tourism places due to best medical services, professional doctors and low cost treatment.

2.4. Wellness Tourism: The idea of this type of tourism is to achieve maximum wellness in health. In one sense it is about health using some techniques. Things like yoga, Ayurveda, which originated in India is been widely used for promoting wellness tourism here.

2.5. Golf and Polo Tourism: Both sports activities are confined to aristocratic people. India is planning to promote this tourism. India's weather is a major asset. 8 months of dry weather is ideal for both sports. This tourism will certainly help increase revenue.

2.6. Wildlife Tourism: India's forest has one of the best bio ecologies. we have some unique species like Asian elephant, rhino, tiger, lions, etc. Indian forest has rich bio diversity. This can be cashed in by promotion wildlife tourism on bigger scale.

2.7. Pilgrim Tourism: India is a land of different religions, and faith. Indian People specially travel across India to fulfill their spiritual desire. Even foreigners get attracted to view these events. For example AmarnathYatra, Kmbhamela.

2.8. Cultural Tourism: India is a country of diverse culture. Every state has its unique culture. Culture gives each state an identity.Many festivals and fairs like PushkarMela (fair) and Geanseh Festivals attract many foreigners.

2.9. Business Tourism: India is of the fastest emerging economies in the world. Lots of foreign companies established offices here. Example IT and Automobile hubs. As a result there is a large scale business related tourism is taking place at domestic and international level.

2.10. Heritage Tourism: Our country has a rich heritage history dating back thousands of years. Each era has contributed in art and architecture. India is a land of palaces, forts, temples, caves. Each piece represent glorious period of our nation. These heritage sites attract many foreigners to India. For Example Taj Mahal.

3. What is Augmented Reality?

This is one of the buzzwords used by many. In simple words augmented reality or AR means overlapping of digital material on the real world environment. Augmented Reality can display images, videos as well as audio on existing environment. It can be displayed on different devices like smart phones, handheld devices, screens, head mounted display etc.

There are four types of Augmented Reality

3.1. Marker based Augmented Reality – This AR requires image for recognition. It needs visual object and camera to scan to show information. Example QR Code

3.2. Marker less Augmented Reality – This AR requires a position or location to display information. It utilizes GPS, Compass, Gyroscope to provide data on users place. It provides maps and direction and related information over a device.

3.3. Projection Based Augmented Reality –This AR technology directly display digital projections onto the physical world. This AR do not requires imagery. Example 7D Hologram.

3.4. Super imposition based Augmented Reality – In this AR technology, view is fully or partially replaces original view. Example Furniture buyer can view furniture in his/her hall using AR application. This application helps to visualize furniture before purchasing.

4. Requirement for AR compatible Devices

Currently there are several devices that support AR like Smartphone, handheld devices. It requires hardware such as camera, sensors, digital compass, CPU and display. Today things like smart phones, tablets, AR glasses, AR contact lenses and Head Up Display (HUD) are some devices widely used for AR use.

5. Use Augmented Reality in daily life
5.1. Navigation
Augmented Reality application will help guide individuals for navigation. It will assist person to locate place and give direction in a visual manner by overlapping the real world.

5.2. Repairs and Maintenance
In coming year's people will be do basic repair and maintenance with the help of AR. These applications will help them to do basic household repairs like repairing of water tap or shower, or electrical appliances.

5.3. Use of Augmented Reality in various fields
AR has started making its presence due to its usability. Following are example of various fields impact can be seen.

5.4. Manufacturing
In this industry AR gadget is providing aid to workers. These gadgets thus are helping to increase productivity by reducing human errors. Helping manufacturing industries saving time and money.

5.5. Education
Augmented Reality tools and gadgets are helping schools and colleges to create interactive models for any subject. This helps institution in learning as training purposes. AR helps to create a 3D model for complicated concept and help students to understand and study.

5.6. Healthcare
AR is helping doctors and other healthcare professionals to do surgery, get guidance in using medical devices. It is also helping determine patients' symptoms and correctly diagnose patient. It is also helping monitor patients as well.

5.7. Marketing
Augmented Reality technology is bringing product to life. It can create 3D animations, videos which are be viewed simply by pointing your mobile device with an application over a brochure, poster, flyer or a phalmplate.

5.8. Fashion
Fashion industry one of the glamorous industries in the world.New trends in fashion design is a major attraction for some. AR can help a customer who loves fashion. The application can help customer's look and feel of new trends over a device.

5.9. Retail
Customers are in dilemma to buy expensive items. AR application helps them to view these costly items before making a choice. It helps in decision making.

5.10. Food Industry
Consumers are getting nutritional conscious. AR will help customers by providing detailed data about ingredients and its nutritional values of a certain food product.

5.11. Tourism
AR can help a lot in tourism industry for example it can give 360 degree view of a hotel and room where tourist is planning to stay. It will help to find tourist attraction locations. This in turn will help him to visit places of his choice.

6. Use of Augmented Reality in various fields in Tourism in India

According to statistica Augmented Reality market will jump from current 5.91 billion dollar to 198 billion dollar by 20205. It can provide new viewpoint and style in customer service. In near future it can significantly change business model of tourism.
According to 2018 Data India has 19, 61,000 Hotels. Even if we take 10 percent five star to three star hotels. There is s a huge potential to develop and use AR in India.

The way Augmented Reality can be used in Indian hospitality sector

6.1. Marketing and Advertisement
In western countries AR is used on a large scale in for marketing and advertisement in tourism industry. In India it has a lot of potential that needs to be tapped. ITC group has started using it in delivering Customer Experience and digital transformations for Service across the industries. Augmented Reality will help improving self-service, assisted service & field service interactions. India has many reputed Hospitality groups like Taj group, Hilton Group which offers executive hotels to foreign visitors. These hotels can provide basic things like room tour, accommodation details, pricing etc using AR. In addition it can provide interactive wall maps that will help tourist places of interest using mobile. A decade back pamphlet and brochures were used for marketing and advertisement purpose.Today Augmented Reality applications can be used to scan advertisement in magazine, newspaper that can provide 3D animation of hotel or provide its information in text format and video.

6.2. Restaurant and Cafes
In India every region has a hundreds of dishes, so selecting and trying a new dish becomes a difficult task. AR can be used as a powerful tool in Indian restaurants. It can help customer to see the dish in 360 degree, read ingredients before buying it. This can also be used to entertain customer between order placed example show a history how a certain dish was developed or a short story of on Indian historical event.

6.3. Transportation
India a vast country. In last 10 -15 years transport infrastructure like better road, railways, started taking shape. Even urban infrastructure is also developing rapidly like metro as a part of Smart city initiative.
Now it is possible to provide interactive maps at metro or bus stops. road maps supported by AR can help tourist to travel without being misguided or over charged. It will provide direction to destination thus helping tourist to reach destination without hassle.

6.4. Tour and Travel

India has a rich history. All major cities have a long history. AR applications can be developed for these cities. It can help tourist go back in time and view city,culture, architecture. It can also be used at zoo, museums, and historical sites. In Indian context it can be more beneficial as sometimes it's hard to find a well-informed person or a guide who can give in depth information. A major advantage is he or she will able to visualize traditional dresses, ornaments, houses that are vanished over a time.

6.5. Interpreter

India is has officially 23 languages. Here around 19,500 dialects are spoken as mother tongues. Foreigners travelling in India AR can be great asset. While travelling with in a foreign country language is a key barrier. All the important information is given or displayed in a countries official language. As English is not being a common language, tourists are not able get proper information. In these places AR can help translate information in tourist desired language. Example a Marathi speaking person can use his tool in Karnataka to scan kannada script and will get translated in Marathi script.

Conclusion

Augmented Reality carries tremendous potential in India tourism sector. This adaptation of technology will help IT as well as Hospitality sector. Just like any other technology it will get accepted after certain time. In the current context COVID-19 has given all sectors in India an alarm bell to change its practices. Now there is a need to look at each sector with a different perspective. Thinking big and out of the box can be a way to bring difference in the tourist. In tourism industry not all can be shifted to technology, humans play important role and it can't be substituted by technology.

Now it is a challenge for tourism industry to run the business with minimum work force in uncertain COVID-19 time. Foreigners who are visiting our country are quite aware about Indian hygiene maintenance tendency so In Indian context it will be more beneficial. There is a plenty of opportunity to create AR enabled places and develop application at famous tourist places. It can help tourist to travel places with minimum human interaction. In return India will able to gain a reputation in the western world for being a technology friendly tourism industry in the world. In future this country, where tourist will travel to exotic destination worry free and enjoy the holidays due to AR technology.

References

1. https://overlyapp.com/blog/marker-based-vs-markerless-augmented-reality-pros-cons-examples/
2. https://www.ceicdata.com/en/india/memo-items-number-of-hotels-and-hotel-rooms/number-of-hotels-rooms-five-star
3. https://www.thehindubusinessline.com/news/variety/india-is-home-to-more-than-19500-mother-tongues/article24305725.ece
4. https://theconversation.com/virtual-reality-adds-to-tourism-through-touch-smell-and-real-peoples-experiences-101528
5. https://rubygarage.org/blog/difference-between-ar-vr-mr
6. https://towardsdatascience.com/how-augmented-reality-ar-is-changing-the-travel-tourism-industry-239931f3120c
7. India Tourism Statistics at a Glance 2019.pdf
8. http://tourism.gov.in/
9. Tilak, G. Usage of Visual Communication Design on Consumer Behaviour.