Trends of Geospatial Technologies and Consumer Behavior in Virtual Tourism across Geographical Distribution

Dr. Seemin Mushir
Jamia Millia Islamia

Virtual Tourism refers to the type of tourism activity where a tourist does not visit the destination physically but an environment is created around him with the use of 3D technology and binaural microphones along with environmental effects so that original visual and audio features are depicted for that tourist destination. Geospatial technologies are also gaining importance among tourists interested in geographic or location specific information about a tourism destination. Although there are studies conducted in the area of virtual tourism as an application towards business setup and marketing activities, but concrete studies on tourist perception towards virtual perception are rare. It becomes even more important in diversified country like India where there are large chunk of populations which can be benefitted through Virtual Tourism facility. Therefore, this study is aimed at finding out significant factors impacting the Virtual Tourism and the latest trends going on this field.

The current study is designed as an advanced exploratory study in combination of basic descriptive design. The major source of information is secondary data through previously published papers, consultancy reports in tourism sector and articles that are published on the same. The core study region is Indian sub-continent with a global approach. Based on the factors generated through the secondary information, 15 senior members from tourism industry (Travel agency, Theme park and Hotels) were interviewed to validate the consumer psychology/behavior towards virtual tourism. Qualitative analysis has been used in this study.

The key findings suggest that Virtual Tourism is surely trending around the world with India becoming a potential destination for the same. The major factors impacting consumer behavior are perceived usefulness of the technology and ease of use which are in sync with the Technology Acceptance Model. Cost of the virtual tourism structure, cost-benefit analysis, educational background requirement for travel, visa process hindrance, and legal complications of the destination are some operational factors that emerged during the findings. There exists a difference in the income, level of technology acceptance, legal requirements to travel and other factors among tourists in different locations.

Keywords
Virtual Tourism, Geospatial Technologies, Geographic Distribution, Consumer Behaviour

1. Introduction
Tourism is an important component of the lives of the people. It is a social activity that provides the tourists with a break from their daily lives (Musil & Pigel, 1994). It also gives them the opportunity to visit new places and indulge in the exquisite weather and natural conditions that might or might not be available in their own area. The tourists therefore look for exclusive places to visit for their vacations so that they can get once in a lifetime experiences like adventurous sports etc. However it is not easy for the tourists to plan a trip. There are various constraints that the tourists have to deal with in order to plan a trip and various problems that they have to face when they actually visit a place.

The financial troubles are what the tourists face first when they start making a travel plan especially for international destinations. Not all tourists have high budgets for their travel plans and hence have to choose their destinations and make their bookings very carefully. The costs that have to be incurred on a trip include the ticket costs, the hotel costs, the within city travelling cost etc. and it is very difficult to get the best deals sitting so far away from the actual destination. Even if the best deals are secured what cannot be ignored are the troubles that are faced when the tourists actually reach the destinations. It has been reported that tourists face immense problems when they plan to dine out in unknown cities or try to get public transport. Moreover, there is also a problem of public signage in international languages that are understandable to all (Travel Weaks, 2010). The disabled people are the most prone to problems.
when they plan to travel as the booking staff is not necessarily cooperative or understanding regarding their problems (IITTM, 2010).

These problems indicate towards a need of revolutionary improvements in the tourism sector. The tourism sector needs innovations that can help tourists with all their problems and hence make the sector more attractive. As rightly pointed out by Garcia-Crespo et al (2009), the tourism industry is in dire need of technology-based integrated value-added services that are extremely active and provide the users with the ability to communicate and gain entertainment. In such circumstances, virtual reality can prove to be a boon for the tourists.

As defined by NASA, Virtual reality is the use of computer technology to create the effect of an interactive three-dimensional world in which the objects have a sense of spatial presence (NASA, 2016). In this technique, computer simulation is used in order to make the object have a feel of a specific environment. Electronic equipments like gloves, helmets with a screen and body suits are made use of in order to make the person feel that he/she is really present in the environment (Steuer, 1993). This technology has been vastly used in many spheres and industries and tourism industry is one of those. Tourism industry has been amply using virtual tourism in terms of marketing. Tourism marketers have used this technology in order to market their destinations by providing live experiences of how it will feel if tourists visit their destinations. Such brief experiences leave the tourists intrigued and wishful of visiting these destinations (Williams & Hobson, 1995).

Geospatial technologies have also gained importance in the tourism industry and it is a vital component of virtual tourism. Geospatial technologies include the use of a variety of modern tools contributing to the geographic mapping and analysis of the Earth and human societies. There are various types of geospatial technologies potentially applicable to virtual tourism industry such as remote sensing, Geographical Information Systems (GIS), Global Positioning Systems (GPS) and Internet mapping technologies (AAAS, 2017).

The other usage of virtual reality in tourism that will be talked about in this study is a step forward than marketing using VR. Virtual reality tourism experience includes the imparting of senses like sight, sound, touch and taste. Experiences like surfing, wall climbing, looking at and feeling the monuments & structures etc. can be made by the tourists just by a visit to the virtual reality stores and centers specially built for the purpose (Cheong, 1995). This is expected to be cost-effective in a country like India. Considering the huge population and a high number of users that virtual reality centers are expected to register. Moreover, with constant improvements that are happening in this field like invention of low cost headsets and other instruments it is now expected that VR will become better and cheaper (Burks, 2015).

As can be seen from the discussion above, tourism sector was in dire need for an innovation that can change its scenario and virtual reality can prove to be that much needed advancement. Many studies have been conducted that focus on studying the application of virtual reality in business setups and marketing activities. However lesser number of studies has been done to know about the importance of virtual reality setups and the value that tourists attach with them. This study focuses on this issue and specifically on the Indian sub-continent. This region is important from the point of view of this study because of its high population and developing economy.

With the changing behavior of consumers as tourist, the current study will be useful for the stakeholders related to virtual tourism business setup. This study will also be useful for the marketing professionals involved in destination tourism marketing through virtual reality. These factors would also be useful for professionals involved in the development of technological solutions related to virtual reality.

2. Literature Review

Virtual reality has been a frequently discussed and researched topic in recent years. Various studies have talked about the usage and implementation of virtual reality techniques in different industries and domains (Rosenblum, 2000; Sanchez-Vives & Slater, 2005; Fritz et al, 2005; Bruno et al, 2010; Zyda, 2005; Opdyke et al, 1995). Virtual tourism is one such domain. Virtual tourism is a developing branch of tourism like many other branches. With an intense development that has been seen in virtual reality
and augmented reality techniques a lot of studies have been conducted that talk about this type of tourism technique.

Virtual or Augmented Reality provides the tourists with tailored content and adds new layers to their reality (Kounavis et al, 2012). Augmented reality has been hyped for more than a decade now and is now in the stage of implementation. Augmented reality is valued more than some of its counterparts because it provides the tourists or the users with easy access to information (Marimon et al, 2010). However, it also has to be accepted by the tourists or its users. Kim et al (2008) have pointed out features that are considered necessary by tourists when they are asked about acceptance of mobile technology. These include Technology Experience, Trip Experience, Perceived Usefulness and Perceived Ease of Use of the technology. They have used TAM as a model basis for judging technology acceptance. Han et al (2014) point out the features that the tourists expect from a virtual reality technique. The tourists expect it to be functional on a multi-lingual basis, should be easy to use and should have the capability to provide personalized services.

Cheong (1995) has highlighted the importance of virtual reality as a tool for bringing tourism in the reach of people. Virtual reality brings down the cost of travel and makes it easier for those who are financially less endowed for making such travels. It provides access to places that are otherwise pretty inaccessible and in remote areas. It also saves the travelers from the misery of making all the arrangements like the ticket bookins and fulfilling VISA requirements. They are also saved from other hassles related to travel like harassment that visitors sometimes have to face, the airport queues, the custom checks etc. It can also prove to be very facilitating for the physically handicapped population who can easily get the feel of travel staying at their own location. The tourists hereby also forgo the accidental risks of travelling. Another great benefit of virtual reality tourism is the protection that it provides to the tourism destinations. The country and its authorities try their best and provide the best of the facilities for safeguarding their location. However, deterioration in the quality of the locations cannot be ignored or overlooked. Virtual tourism guarantees this protection. Since there will be no real interaction between the tourists and tourism destination therefore there will be no harm that will be brought to the latter. The authors bring out the possibility of even business travels getting affected because of the new possibility of virtual reality being used for them. The authors however discarded the possibility of virtual reality tourism replacing the original tourism. However real the experience is it never possibly provides the experience that the actual tourist destination would. The weather, the natural ambience, fragrance and all the other associated features might not be replicated to perfection.

Musli & Pigel (1994) have also made the comparison between virtual reality and tourism. They have pointed out things similar to Cheng (1995). On the one hand virtual reality provides a hands-over benefit in terms of costs and hassles it also saves them of the risks of accidents, fatal and otherwise. The time of the tourists, which is a very crucial decisive component for any kind of activity nowadays, is also saved. The feature of official guides is also made available in these virtual systems which can provide a further enriched experience to the tourists. However, virtual reality has its own harmful consequences. It might make the people cut-off from nature and the need to actually take offs from their routines. The virtual reality might seem more comfortable but might disarm people of their ability to deal with reality. It has been therefore suggested that the tourism operators should sell their tours on the benefit of them being a social experience. The destination countries were recommended to market themselves as a more complex environment so that tourists are motivated to visit them rather than taking virtual experiences.

Hobson & Williams (1995) has identified similar benefits of virtual reality as the above mentioned authors. They also recognized that virtual reality tourism breaks down the barriers between costly travels and less earning individuals. They also talked about the benefits it would accrue to the disabled people who otherwise feel helpless when it comes to travelling especially long distances and unknown places. A very significant contribution of virtual reality tourism was found to be the support it provides for sustainability of the tourism destinations. Dewailly (1999) has in particular talked about the movement from reality to virtual reality in tourism domain as a step towards sustainable tourist space. In their paper they have debated in favor of virtual reality being a way to deal with mass tourism.

Huang et al (2013) have conducted a study on a platform known as ‘Second Life’ that has been created in order to promote tourism in ‘Maasai Mara’. In this space the creators provide the tourists with
a virtual tourism experience and make them acquaint with the surroundings of the place. The researchers have made use of novice and experienced users of the website in order to know about the factors that likely affect their behavioral intentions. TAM has been used as the base model for testing the impact of perceived ease of use and usefulness, enjoyment, positive emotions, emotional involvement and flow on behavioral intentions. The effect of all the factors on travel intentions was found to be significant. For those who want to build virtual tourism destinations it was recommended that they make their sites easy to use and navigate. The travelers will be interested in using the site only if they find it comfortable. The other factors like enjoyment and emotional involvement were found to be mediating factors but are essential for any kind of tourism experience, real or virtual.

These studies thus show that virtual tourism has its pitfalls but it also has benefits that make it attractive for the prospective tourists. We have also seen that authors have conducted studies where they have tried to see the factors that affect the intentions of tourists towards virtual tourism. In this study the same will be attempted however it won't be a quantitative study. The use of interview results and information collected from articles will be made in order to know about the factors that tourists rate important for the use of virtual tourism.

3. Methodology
This study is focused on the trends of Virtual Tourism and the behavior of consumers towards the same. This study has been conducted as an advanced exploratory study with basic descriptive design. In the literature review, the pros and cons of virtual reality as a tool for tourism have been discussed. Thereafter, a study has been reviewed that discusses the impact of several factors on the intentions of the tourists to use this tool. Majorly secondary sources like articles, newspaper reports as well as reports from consulting companies have been used in order to collect data. Moreover, interviews have also been conducted with 15 senior members of the tourism industry belong to different travel agencies, hotels and theme parks in order to know their view about the behavior of customers in case of virtual tourism. Focus has been laid on the Indian sub-continent as the region of study. Content analysis technique has been used in order to deduce results from the collected data.

4. Findings
Virtual reality has been found to be a new revolution in today’s times and is expected to have a market worth $15.89 Bn by 2020 (Markets & Markets, 2015). India’s VR has been valued at USD 3.4 Million in January-March 2016 (Saluja, 2016). In a survey done on the US population sample, 44% of the respondents were found to be interested in Virtual Reality. The number of virtual reality users worldwide was found to be 43 million as of 2016 (Statista, 2016). Virtual Reality is being used by many industries which include air traffic control, military & law enforcement, education, entertainment, virtual tourism environments, advertisements and many others (Carson, 2015; Kisielnicki, 2008). Tourism along with entertainment is one of those industries which have been using it most prominently. Tourism industry uses it to their advantage in the case of advertising. Virtual worlds help in building businesses, tourism and otherwise.
Tourism, entertainment and games together are expected to form 68% of the market for VR software by 2018 as forecasted by Superdata. Expectations regarding the VR market have also been made in totality. It has been predicted that although both the hardware and software sections of the market will be growing, the growth rate of software VR market will be higher than the hardware VR market from 2016 to 2020 (Graham, 2016).

Geospatial technologies are also an important aspect for tourists interested in geographic or location specific information about a tourism destination. This would help the tourists to gain knowledge about available amenities, facilities and climate of the region they intend to visit. The management users (tour operators, tourism group and policy makers) of this technology use it for specific strategic planning and decision making. There are a variety of types of geospatial technologies potentially applicable to virtual tourism such as (AAAS, 2017):

- **Remote Sensing**: This involves imagery and data collection from space- or airborne camera and sensor platforms. Commercial satellite image providers also offer detailed images.

- **Geographic Information Systems (GIS)**: This involves use of software tools for mapping and analyzing data that is georeferenced or alternatively called geospatial data. GIS is also used to provide interactive mapping to enhance public participation and collaboration in decision-making processes.

- **Global Positioning System (GPS)**: Virtual tour apps use GPS systems and location-based technologies that help people navigate new areas. The GPS software lets people build their own GPS-enabled games and tours for portable devices.

- **Internet Mapping Technologies**: This involves software programs like Google Earth and web features like Microsoft Virtual Earth that is altering the view of geospatial data. The traditional GIS are mostly used by specialists and software experts but developments in user interface are also making such technologies available to a wider audience.

The results of the similar European system called Galileo will be operational within the next several years while a Russian system interviews conducted with senior members of the tourism industry pointed out to the growing importance of VR in the tourism industry. The ease of use of technology and its perceived usefulness are cited as the reason for people’s preference for virtual tourism. The members also acknowledged that it is possibly due to the complicated VISA procedures, educational background requirement for travel, legal complications of the destination and cost-benefit analysis act as hindering factors for the tourists in case of actual tourism.

Tourism has been found to be enhanced due to technology (VRS, 2016). For example, maps and navigation have helped in improving the quality and ease of tourism. Virtual reality has also been believed to be helpful for the growth of this sector. Virtual reality can be used for the purpose of advertising for a destination, giving previews about it and making tourists have a taste of different kind of experiences. Destination BC has made use of virtual reality as a method to promote tourism. It has made marketing videos that provides glimpses of what the tourists can expect from British Columbia as a destination. The insides of the Great Bear Rainforest were put in as a part of their The Wild Within VR Experience (Wired, 2016).
Las Vegas as a destination has actively embraced the VR technology in its attempts to advertise and promote the destination. A special app called Vegas VR has been launched by the destination authorities in order to incentivize people to visit it (Mashable, 2016). Marriot, for example, uses Oculus Rift to impart a 4D experience to its guests. It uses this as a part of its ‘Travel brilliantly’ campaign. It provided that experience in a special Teleporter station where the guests can have a feel of the exact surrounding that they are being shown (Parker, 2016). However, it is being said that virtual reality cannot really replace the pleasures and comfort of actual tourism until the industry makes some high end innovations in the same.

India has also shown the presence of Virtual Reality technology in various industries. The presence of MerakiVR is an evidence of the entry of VR in Indian technology arena. MerakiVR has been credited with capturing the first VR cricket match (India versus Bangladesh held in Dhaka in February 2016). They work for both consumers and businesses (Reddy, 2016). Tesseract Inc. is another example of India’s share in the virtual reality market. India not only has contributed to the software development but also hardware development under virtual reality. Tesseract Inc. has created the 360 Virtual Reality Cameras for commercial purposes which are being used by companies currently. The organization is now planning to release its 360 Virtual Reality Cameras – ViCAM built for consumers (Deoras, 2016).

Besides the software and hardware technology being put to use, one can also see arcades that have been built in the country that provide the people with virtual experiences. Smaaash, with its first arcade in Mumbai, has now expanded its operation to other cities like Gurgaon & Noida in NCR, Hyderabad and Bengaluru. This arcade provides the tourists with virtual experiences like Finger Coaster, FlyMax, Virtual cricketing and footballing. This has enhanced and raised the bars for virtual reality scene in India (Sathe, 2015).

Virtual reality has also been used in Indian tourism industry. India VR Tours is an organization that provides with VR tours of some of the most prominent tourist destinations of India (IndiaVRtours, 2016). Tourism corporations also aim to instill the VR promotions on their websites in order to allure tourists into visiting destinations (Madaan, 2015). Moreover, virtual reality is now also be used to provide the devotees to get a view of and worship the temples that they want to visit but are out of their reach. Ushapur village saw the installation of one such stall where people could see a 360 view of the Mahakaal temple. This stall got an immense response where the stall managers attended some 200 people over 7 hours (Verma, 2016).

With or without innovations, virtual tourism is very effective a tool for those who don’t have resources or have some kind of physical incapability. The scarcity of resources such as finances or ability to walk or travel may result in people missing out on the travel experiences. Virtual reality provides such people with an alternative to travel and explore the world to the best of their capability (Burks, 2015). But the financial aspect is different in different countries which makes the level of acceptance/ use of the concept of Virtual tourism different in different locations. The travel attitudes of tourists differ in countries due to different level of technology acceptance, that is, perceived ease of use of technology by the tourists. Their level of comfort with technology impacts their intention to use virtual reality concept for tourism. Social factors such as interests of the people in a particular location also have an impact on his/ her perception about the use of virtual tourism (Huang et al, 2013). Cost of the virtual tourism structure, cost-benefit analysis, educational background requirement for travel, visa process hindrance, and legal complications of the destination are some other factors that impact the intentions of tourists to use virtual tourism. These factors may differ in different locations educational background may be different, legal requirements of countries may also vary (Nelson, 2016).

5. Discussion and Conclusion

Virtual Reality has been found to be a developing dream for various industries in the economy. Tourism and entertainment is the industry that can benefit from it the most. Tourism industry can take the advantage of marketing through virtual reality. Tourists are more attracted to a place once they get a firsthand view of the destination. Destinations all over the world have made use of virtual reality for this purpose and India is no exception. India has also landed itself into the market for virtual reality software and hardware development which gives it an edge as a market for virtual reality arcades and tourism.
experience centers. Smaaash has been seen as an example of virtual reality arcade in India that provides experience related to gaming and adventure activities. Another example has been in the form of temple VR stall that has been created by a VR passionate company in order to allow the devotees to worship in the temples that they otherwise could not because of the swarm of worshippers. A large number of people were found to be using this stall in order to worship their deity.

India uses VR for both promoting their own destinations and also gaining experiences themselves in the form of virtual tourism arcades. People value this new technique, both the tourists and businesses alike. It has proved to be a successful marketing tool and is also used by tourists to gain information (Huang et al. 2013; Marimon et al, 2010; Han et al, 2014). The tourism industry seniors also point out from their experience towards the relevance of virtual tourism in the coming years. They put down perceived ease of use and perceived usefulness as the deciding factors for the acceptance of technology. This is in sync with the literature and the factors of Technology Acceptance Model (Kim et al, 2008; Han et al, 2014; Huang et al, 2013).

Cost has also been portrayed as one of the important part that affects the acceptance of any kind of technology in tourism industry. Cost has been talked about in two ways, how the cost of the trip can be reduced and how cost-effective can be the VR tour options. The first part is addressed as the VR tours in all provide with a low cost alternatives to actual tours (Musil & Pigel, 1994; Cheng, 1995). On the other hand it can be seen that in the Indian tourism industry’s focus has been laid on bringing low cost VR options so as to allure the tourists (Burks, 2015). Virtual tourism provides the tourists with lots of information and personalized content (Marimon et al, 2010; Kounavis et al, 2012). This attracts the tourists towards it and encourages them to use more of it.

This therefore implies that Virtual Tourism has the potential to make its mark in people’s minds and gain acceptance thereby. The acceptance of virtual reality by India has also been observed largely. India has been using virtual reality in many industries like air traffic control, military & law enforcement, education, entertainment, virtual tourism environments, advertisements etc. and it has been found to be very fruitful in all of them. Although virtual tourism might not destroy tourism as an industry but it will surely facilitate several tourists to get a view and feel of the destinations and activities that they otherwise cannot afford due to financial or other reasons.

References


