

# Social Media and Big Data for Marketing Medical Tourism in Thiruvananthapuram

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**Abstract:** Thiruvananthapuram, the capital of Kerala is blessed with abundant natural beauty. It is flanked by the Western Ghats on one side and the Arabian Sea on the other. It is one of the top international tourism destinations in India. Thiruvananthapuram has also got good healthcare infrastructure. But it is not among the top 5 healthcare tourism destinations in India. Thiruvananthapuram is also home to the oldest and largest software technology park in India. By tapping into the local IT ecosystem, Healthcare Tourism in Thiruvananthapuram can leverage technological advancements to improve its standing. This paper looks at two ICT developments – Social Media and Big Data Analytics, that can be utilized for marketing Thiruvananthapuram as a Healthcare destination and to continuously improve its prospects.

**Keywords:** Social Media, Big Data, Analytics, Thiruvananthapuram, Medical Tourism.

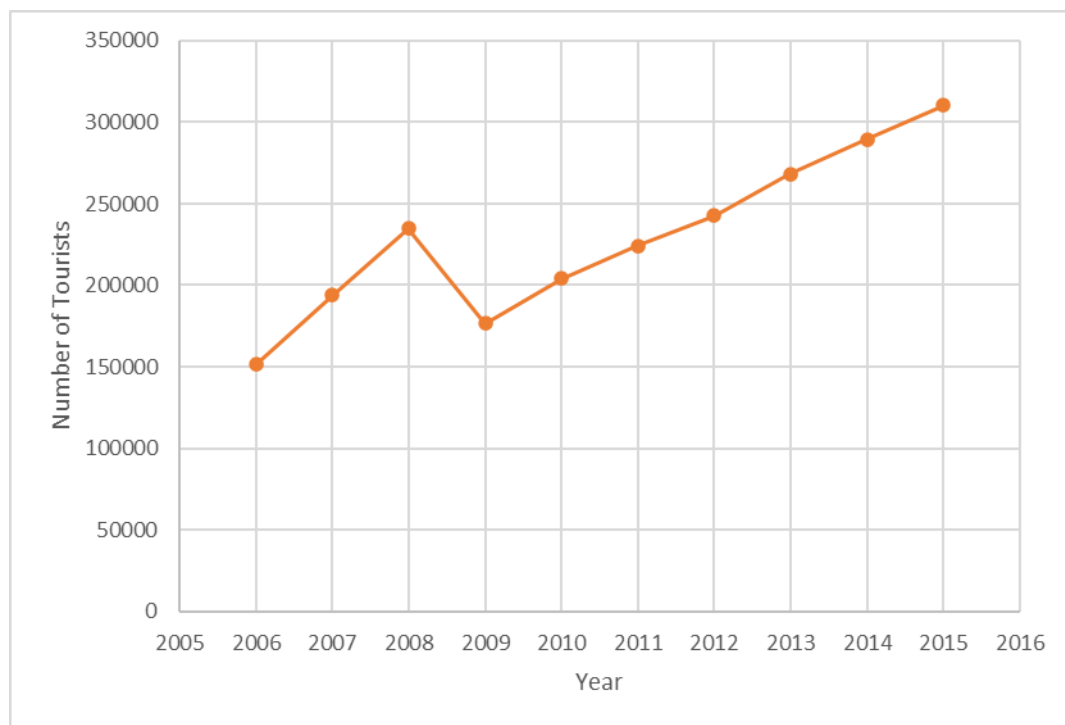
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## I. INTRODUCTION

Thiruvananthapuram, the capital city of Kerala, is blessed with natural beauty. The Thiruvananthapuram district lies in between the Arabian Sea in the West and the Western Ghats on the East. Thiruvananthapuram is home to the internationally renowned beaches of Kovalam and Varkala, and also the hill station of Ponnudiyu. Thiruvananthapuram also has many other beautiful beaches, backwaters and waterfalls. There are also trekking destinations. Being the capital of the erstwhile princely state of Travancore, it is dotted with heritage monuments like palaces, forts, and museums. Thiruvananthapuram is one of the most sought after tourism destinations. Foreign tourists have been flocking to the Kovalam and Varkala beaches every year.

Thiruvananthapuram accounts for a major share of the tourists visiting Kerala. The foreign tourist arrival to Thiruvananthapuram over the period 2006-2015 is shown in Figure 1. It can be seen that the foreign tourist arrivals to Thiruvananthapuram have been growing every year except for a blip in 2009, which could be attributed to the global recession [14]. Thiruvananthapuram is also a major attraction for domestic tourists.

Thiruvananthapuram also has excellent medical facilities in the government and private sectors. These healthcare facilities offer specialized treatments under allopathy, Ayurveda, homoeopathy, and other traditional Indian medical systems. Government Medical College Hospital, Thiruvananthapuram, founded in 1951, is the oldest Medical College in Kerala [9]. Thiruvananthapuram is also home to the 125 years old Government Ayurveda College Hospital [5]. Ayurveda College Hospital has a separate campus for the Panchakarma institute in Thiruvananthapuram. Panchakarma treatment deals with purificatory treatments for the body. Ayurveda panchakarma treatment attracts a lot of medical tourists. There is also a Government Homoeopathy College Hospital in Thiruvananthapuram. In addition to these, there are many well-equipped privately run super specialty hospitals situated in Thiruvananthapuram.



**Fig. 1. Foreign tourist arrivals to Thiruvananthapuram during 2005-2016**

But even though Thiruvananthapuram is one of the top destinations for tourists visiting India, it is not a top destination for Healthcare tourists. This, in spite of it having an excellent healthcare infrastructure.

## II. EXPLOITING TECHNOLOGY

Thiruvananthapuram is also home to the oldest and largest software technology park in India. Many of the major national as well as international IT companies have set up shop in Technopark, Thiruvananthapuram. The Tourism sector in Thiruvananthapuram, and the Medical Tourism sector in particular, can collaborate with the IT sector to exploit software technology developments and utilize technology to catapult Thiruvananthapuram to the top league of Healthcare destinations.

## III. OBJECTIVES AND METHODOLOGY

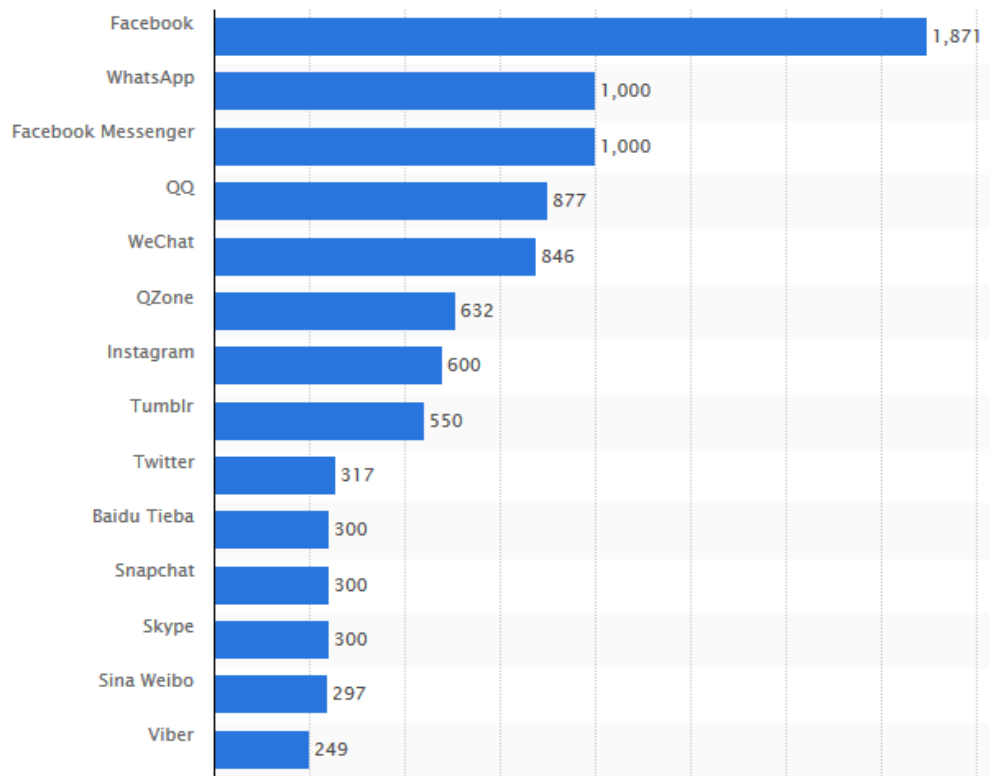
The objective of this paper is to explore the technologies and applications that can prove beneficial in Thiruvananthapuram's bid to emerge as a Healthcare Tourism hotspot. To this end, this paper does a study of the literature on the themes – Social Media, Big Data Analysis, and Tourism. Based on the literature study, this paper draws conclusions for the Healthcare Tourism sector in Thiruvananthapuram.

## IV. SOCIAL MEDIA

The advent of social media has completely revolutionized communication. While in some cases social media has completely replaced traditional channels of communication, in some others, it has complemented them nicely. Advancements in mobile phone technologies have paved the way for social media tools to enter the lives of almost everyone. This has opened up new vistas for marketing products and services to potential customers anywhere in the world. The area of concern for this paper is the Social Media marketing of healthcare facilities to potential medical tourists.

## V. SOCIAL MEDIA MARKETING

There is no single definition for social media. Andraes M. Kaplan and Michael Haenlein define Social Media as “a group of Internet-based applications that build on the ideological and technological foundations of Web 2.0, and that allow the creation and exchange of user-generated content” [7]. The most popular social media tools include Facebook, WhatsApp, Instagram, and Twitter.



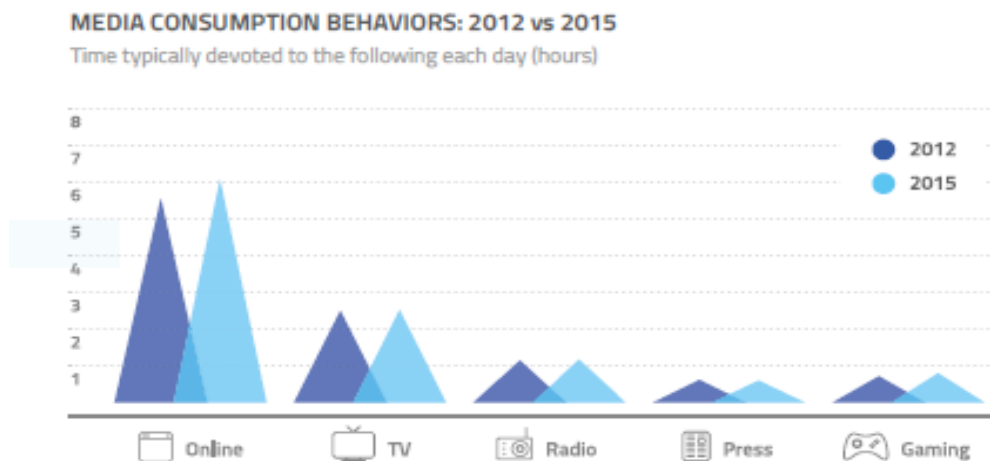
**Fig. 2. Number of active users of social media applications (in Millions)**

**Source:** <https://www.statista.com/statistics/272014/global-social-networks-ranked-by-number-of-users/>

One of the major reasons for such tremendous growth and popularity of social media is their availability on the mobile phones. Almost all the mobile phones that are in the market including feature phones come with these apps installed. Smart phones provide additional features for social media apps. The availability of internet on mobile has contributed to the popularity of social networks. This has resulted in people turning away from traditional media.

While the consumption of the traditional media has shown a declining trend worldwide, digital media has usurped the space held by the traditional media. Studies have shown that the younger generation spend most of their time online [6]. Digital media, especially social media is a channel that will help organizations reach maximum number of people.

The following graphic shows that online media consumption has shown an increasing trend while the traditional media consumption has stagnated.



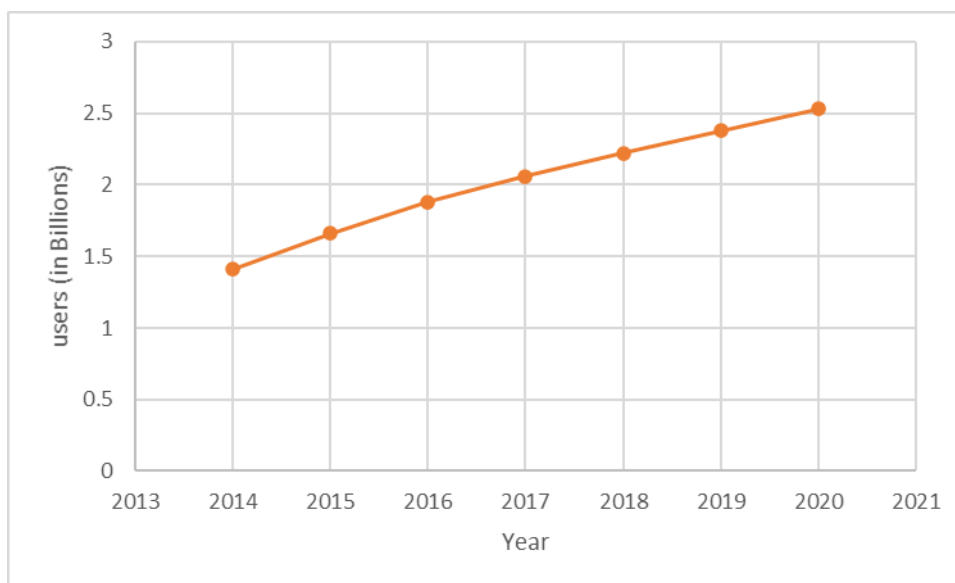
**Fig. 3. Online media vs traditional media consumption - 2012 to 2015**

**Source:** Digital vs Traditional Media Consumption, GWI Insight Report, globalwebindex

The digital media and social media usage is also maximum for the younger generation when compared to the older generation. The age group 16-24 spend almost 7.5 hours per day online [6]. For the age group 16-34, majority of their online time is spent on social networking. Overall, social media consumption accounts for 1/3<sup>rd</sup> of every minute spent online [6].

The average mobile internet usage all over the world has also increased from 1.5 hours to 2 hours a day over the past 4 years. Studies have also projected that almost 1/3<sup>rd</sup> of the global population, that is 2.34 billion people, will be using social media this year. The following figure shows how social network usage has been steadily increasing while the percentage of internet usage has stagnated over the years.

The number of people using their mobile phones for accessing social networking websites or apps also shows an upward graph over the years.



**Fig. 4. Mobile phone social network users**

**Source:** eMarketer, June 2016

With such wide reach of Social Media, it was only a matter of time that it became a crucial channel to be used for marketing. According to Hsu-Hsien Chi, Social Media Marketing provides meaning and connection between brands and consumers and offers a personal channel and currency for user-centered networking and social interaction [3].

## VI. SOCIAL MEDIA AND MEDICAL TOURISM

Social Media has had a tremendous impact on the tourism industry, and has changed the way potential travelers search for as well as create information collaboratively [15]. Collaborative tools help travelers and tourists to exchange information, provide reviews, and rate the various facilities they have visited. It also provides the organizations a direct channel to the potential travelers.

This paper narrows down the scope to the medical tourists. Potential medical tourists access the internet for information on medical facilities, the cost factor, accreditations, facilities, waiting period, details about the doctors, and the care and service that the healthcare tourism facilitators provide [8]. They also provide reviews of the facilities they have visited. In such a scenario, it becomes all the more important for the Healthcare tourism facilitators to have an internet and social media presence and disseminate positive information about their own facilities.

## VII. BIG DATA

Major advances have been made in the area of data generation and consumption. Tremendous amount of data is getting generated by the minute. A whole new segment of data analysis has been spawned from it, called Big Data. The analysis of this data not only helps in analyzing past trends, it is also being used for predictions. Big Data, Data Analytics, and Data Science are some of the terms and areas that have come up because of the data revolution.

The data explosion has revolutionized many fields by bringing in entirely new perspectives because of Big Data. Is it useful for the healthcare tourism sector in Thiruvananthapuram? How can the Healthcare tourism sector in Thiruvananthapuram utilize Big Data? These are the questions that this paper tries to answer.

Big Data is a term that represents large datasets – huge amounts of data, being produced every minute. The growth of internet, in particular social media networks, has contributed tremendously to the generation of large amounts of data. Earlier, statistics used to deal with collection and analysis of samples of data. One of the main reasons for this was the challenge in collecting the data and also the challenge of analyzing large quantities of data. But the advent and growth of internet and the technological advances have made it possible not only to collect as much data as possible, but also to analyse large datasets. Big Data analytics is one of the fastest emerging fields.

It is interesting to note that a few years back too much of data was considered as information overload. Today, not only is every bit of data considered important, Big Data analytics is one of the fastest emerging fields. The first uses of the term Big Data to represent large datasets can be attributed to Michael Cox and David Ellsworth who used the term in their paper “Application-controlled demand paging for out-of-core visualization” in the Proceedings of the IEEE 8th conference on Visualization, October 1997; and John R. Masey, Chief Scientist at SGI, who used the term in a paper titled “Big Data... and the Next Wave of Infrastrass”, which was presented at a USENIX meeting in April 1998 [13].

Big Data is characterized by “three V’s”:

- Volume: This indicated the enormous amount of data that gets produced.
- Velocity: This indicates the high speed at which data is generated
- Variety: This denotes the heterogenous nature of data that gets generated from various sources

Big Data analytics is now being used in various segments such as online retailing, manufacturing, healthcare, education, and even by the government. Many governments use Big Data analytics for national security purposes. Questions are frequently raised about the ethics involved in the use of Big Data.

On the internet, everyone leaves their foot print when they browse. This helps in gaining knowledge about the preferences of the user - their likes and dislikes. The social media networks are a goldmine of such user preferences. When these data are mined, they can be used for predictive modeling and predictive analytics. Predictive analytics uses algorithms and machine learning to predict possible outcomes. Predictive analytics helps in predicting user behavior and in tailoring marketing campaigns to attract users.

Big Data and Predictive Analytics produce insights into users and markets. Data Analytics can be used effectively in the tourism sector.

## **VIII. BIG DATA AND TOURISM**

The world of internet is a veritable goldmine of data for the tourism sector. Airline reservations, Hotel reservations, local travel arrangements – everything happens online. And the users leave their comments and reviews for the services. There are specific websites that have only user reviews of the hotels and places that have been visited. Most of the travel and tourism service providers also have their own mobile apps. The users after availing the services rate their experience. There are travel blogs and discussion forums. The service providers also have feedback mechanisms – online as well as call centers. Call centers is an important source of data that can be analyzed to uncover valuable information [1]. The emergence of social media and its enormous popularity has meant that almost every tourist leaves a data trail on social media too. The volume of data on social media is even more when compared to other sources. Data from social media can be subjected to sentiment analysis, to ascertain the tourist/traveler’s sentiment about the visit [2].

While using these online services, the user leaves a data trail [4]. For each user, or type of user, this adds up to huge amounts of data. This also gives a glimpse of user preferences for a particular region.

The sources of the data are different, and so is the nature of the data. To gather this data and to analyze them, the traditional technologies and infrastructure are not enough. A complete revamp in approach to analyzing the data is required [16].

The data online comes from different sources – structured data comes from travel management websites, blogs, and so on. But a major portion of the data, almost 75% of it, is unstructured and is not available at one place, but from multiple sources and in multiple formats. The sources of such data include social networking websites such as Facebook, micro-blogging sites such as Twitter, other websites which have user-generated content such as TripAdvisor and Quora. The content from these sources can be text, video, audio, photos, and so on.

### IX. BIG DATA AND MEDICAL TOURISM

Very similar to the larger subject area of Tourism, data for Medical Tourism can also be similarly found from the trails left by users online. With the proliferation of internet services and social media networking websites and applications, healthcare tourists now post extensive reviews of the healthcare facilities they visited, the pros and cons of the healthcare facilities visited, give ratings, and so on. Analyzing the data available can paint a good picture about the general opinion of the healthcare tourists about a location or a facility.

### X. CONCLUSION

The potential of Social Media and the avenues it provides, offers immense scope for marketing healthcare facilities for attracting medical tourists. The tourism authorities can tap into the data available on internet - the data trail that healthcare tourists leave on the internet – to learn about their expectations as well as their preferences and habits. It will help in analyzing the trends in the Healthcare tourism sector worldwide. Analysis of this data will help in getting a good picture of the expectations of healthcare tourists. This can be used as input for designing healthcare tourism packages. Social Media Marketing and Big Data Analytics can help Thiruvananthapuram to package the tourism products appropriately.

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