**Report on Big Data for Travel Business**

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# **Executive Summary**

In the field on information technology, big data is the trending topic now a day. It is reported that data of almost 2.5 quintillion bytes is generated each day, which shows the need for the big data technology to be used to analyze and maintain this huge amount of data. In travel sector, this need is twofold due to high competition, for data gathering and then providing customized services and marketing efforts along with the better decision making. This report is organized to investigate the big data opportunities available for a travel firm. Besides this, Porter’s value chain analysis is done along with the five forces for better understanding of the processes and actions needed to get the competitive advantage. The report can be used as a guide for travel firms that whether they should adopt big data technologies or not.

# **Introduction**

Big data as the name suggest is a data set too big to be handled or processed through basic or traditional methods of processing. This kind of data could be originated from internal as well as the external sources, and the data of this type is associated with views as well as behavior, and habits of the customers. Now a day’s businesses collect an extremely large amount of data hence, using big data is getting in the top priority lists of every type of businesses and this fact is true especially for the traveling industry. Although big data can be used for many purposes, however, travel companies could use it carry out predictive along with the behavioral analysis of the customers and use it to create future opportunities and be successful in today’s competitive environment. Big data as the name suggest is a data set too big to be handled or processed through basic or traditional methods of processing. This kind of data could be originated from internal as well as the external sources, and the data of this type is associated with views as well as behavior, and habits of the customers. Now a day’s businesses collect an extremely large amount of data hence, using big data is getting in the top priority lists of every type of businesses and this fact is true especially for the traveling industry. Although big data can be used for many purposes, however, travel companies could use it carry out predictive along with the behavioral analysis of the customers and use it to create future opportunities and be successful in today’s competitive environment.

The traveling company can manage revenues along with reputation management, strategic marketing, improve customer experience, and conduct market research by utilizing big data. Also, travel companies can provide the customers with a user-friendly interface and hence, could introduce differentiated services by understanding their travel needs. This report documents the ways a travel company can use and implement big data to improve the ways it can serve its customers and also maintain its competitiveness. However, it is still confusing for the travel company that how this technology of big data can revolutionize and add value to their existing processes of the business. The following report explains in detail the ways big data can create opportunities for this travel industry and then the aspect of value creation along with the analysis of porter’s five forces.

# **Big Data Opportunities**

Although big data is getting an essential part in almost all type of organizations however, for a travel company using this technology is essential. The main reason behind this increased importance is the management of the revenue which is essential for success. Through big data, the travel company can serve the right customers by selling the right type of product at the right time and through right channel, and hence can maximize its financial results. Along with this, travel companies could direct their training efforts towards the right side by getting the information through customer feedbacks they share on different platforms about their experience with the company. Also, as the marketing towards the right direction is not that easy for travel company due to the varied type of customers but, through big data by utilizing the trends the best type of marketing opportunities could be utilized to increase the chances of success (5 Ways Big Data Can Benefit the Travel Industry).

It is a fact that whenever a traveler starts thinking about traveling somewhere, pricing is the main part of that decision and he chooses that company which is offering the most affordable price. According to (Rajput) through big data, the travel company can check the pricing policies of its competitors and hence can develop that type of pricing policy which is customer oriented and ultimately achieve success. (Rashidi, Abbasi and Maghrebi) in their recent paper about big data explains the importance of extracting the transportation information of people from social media. They conclude that by using big data, important traveling information including the trip purpose, duration, mode, and destination can be gathered from social media. Besides this, demographic information can also be collected about the travelers, which can be used to assess the daily travel behaviors of people belonging to different age groups and having different levels of income. Besides this, the data collected from social sites can be used for the development of models to estimate the travel demands along with planning purposes and managing the operations (Hasan and Ukkusuri).

# **Value Creation using Big Data**

Now a day it is the main aim of almost all type of organizations to explore and analyze the ways through which big data could be used for value creation because by using big data managers can use information for better decision making as well as improving the performance of the company and same is true for a travel company as well. Recently digitalization disrupted the travel industry by great extend because, it changes the way through which travels research the contents, compare different options, and book their travel details. Data generation is growing rapidly through this type of digitalization in the travel industry because, an airline or a small travel company can gather data in hundreds or thousands of terabytes, however, through the use of big data, travel companies can now capture the potential of such large amount of data fully

(Garcia and Reguero) in their recent articled revealed that the travel sector can use machine learning, image recognition as well as the language processing for value creation because all of these are sufficiently mature enough now. The main ways through which travel companies can create value are customer acquisition, demand optimization, and customer experience.

First of all, a travel company can increase its marketing ROI by adjusting the marketing budget to be invested in the most favorable type of audience. However, getting the exact information about this target audience can only be possible through using big data technologies because predictive models which are based on patterns of historical navigation can be used for the purpose of scoring every lead which is entering in the company’s site and can create the qualified audience. This advanced audience creation along with the improved remarketing strategies through machine learning allows the travel firm to reduce its marketing investments up to 50% while keeping the conversions at a stable position (How Big Data Analytics Is Transforming The Travel Industry).

Secondly, a travel company can optimize its revenues through dynamic pricing by using big data. For creating the pricing policy based on data, estimates about the customer’s conversion probability are the initial step. However, these type of estimates about the willingness of the customer to pay can only be possible through algorithms established by machine learning. Through dynamic pricing, the travel company can manage and boost its revenues more rapidly as compared to the previously used systems of revenue management.

Last but not the least, as previously explained the travel companies use customer surveys to get their feedback however, as the feedback forms were unstructured hence, complete information was not translated into remedial actions. But now through the technique of natural language processing, travel companies can create value by reducing cost by dynamically understanding the perceptions of the customers and then the recommendation of corrective actions automatically.

# **Porter’s Value Chain Analysis**

Porter in his book (Michael), developed a value chain which is also known as porter’s value chain analysis and explains it as the collection of those activities which a firm perform for the purpose of value creation for customers. On the basis of this value creation, firms can achieve a competitive advantage and ultimately can get higher profit. As far as the big data drivers are concerned, which are presented previously, they create a value chain for a travel company in a way which not only affects its costs but also its profits.

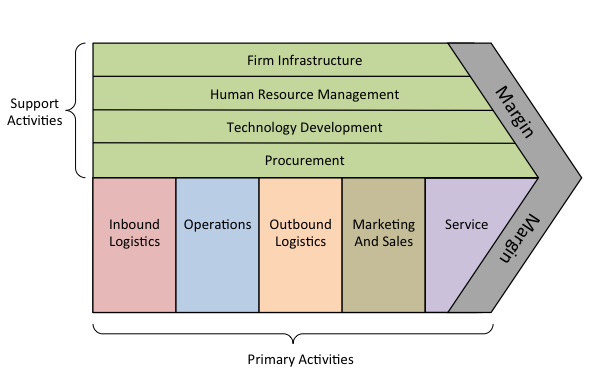


Fig. 1: The value chain Adapted from Porter, 1990.

The above figure presents the basic activities of porter’s value chain including primary activities which are the main activates of the business to deliver a service or a product, and supportive activities are those activities which are used to enhance the primary activities. For a travel company its primary activity id to provide travel services to its customers. However, by the adoption of big data this value creation process will be enhanced for the travel company by a great extent (Curry). Below is the explanation of the process through which each of the activity in this value chain will be enhanced through big data.

## **Primary Activities**

### *Inbound Logistics*

Travel companies usually provide the traveling service with collaboration of other businesses also. For example, if the company has to provide a holiday package, then it involves the flight, accommodation at destination, car rentals, etc. Hence, by using big data company can easily get the required information in a few seconds about all these suppliers of the required service and provide the customers with required service offerings on time. (Zeng and Glaister) explains this as a network collaboration to get the required resources and get higher firm performance.

### *Production*

In the production stage, the traveling company can use the huge data collected from the supplies of specific service and after analyzing this unstructured data to select the most affordable of cost-friendly supplier and hence, can present its offering at the lowest possible price as compare to its competitors.

### *Outbound logistics*

As previously explained, a traveling company can get a huge amount of data using advanced big data techniques to analyze the preferences and perceptions of its customers. This customer data enables the firm to offer only those services which are demanded by the customers and hence, it can save the cost of marketing as well as the profit maximization.

### *Marketing and Sales*

By using big data, a traveling company can develop a specific type of marketing strategies to be used for the target audience. This advanced technology can store huge amount of customer data and presents it in a structured form which enables the traveling firm to take decisions immediately according to the demands of the customers and can direct its marketing costs towards the right customer groups. Besides this, the marketing ROI can also be increased through this technology.

### *Services*

After the successful delivery of a traveling service, the feedback of the customers is also essential to take corrective actions. By the use of big data, the feedback can be collected from a vast type of platforms and then can be analyzed to answer quires related to the provided service.

## **Support activities**

### *Firm Infrastructure*

Traveling firm’s infrastructure is mainly based on technology today and using big data technology will only enhance the infrastructure of these firms by adding value through increased operational speed.

### *Human resource management*

HRM is as important for a traveling firm as for the other firms. However, management of human resource will get easier by the use of big data because, getting feedback timely and continuously will enable to the firm to develop those type of training programs which are compulsory and hence, it reduces the cost.

### *Technology development*

Big data technologies are the latest tools to manage a large amount of data and then using it for analysis of trends, customer priorities, perception, and feedback. By using this technology, a traveling firm could create a competitive advantage to increase market share and profit.

### *Procurement*

By the use of big data, procurement of traveling firm will become computerized and customers will be able to book the details using multiple options given by the firm according to the demands of different type of customers.

# **Porter’s Five Forces Analysis**

Analysis of Porter’s five forces is essential for getting information about the future success or failure of using big data for traveling firm. These are the five forces which establish a competitive advantage for any firm (Martin).

## *Bargaining Power of Buyers*

By using the big data, a traveling frim can control the barraging power of the customers by making analysis about the pricing and offering of competitors and hence, providing those type of services which are not offered by competitors at a lower cost. By this way, if customers apply their bargaining power by checking the price or services then, they will surely select the firm offering lower-priced services. Besides this, by capturing and storing huge amount of data from customer ordering details and their feedback, the company will be able to provide the buyers with enough information to compare and contrast with other companies.

## *Bargaining Power of Suppliers*

Use of big data will not provide a travel firm with competitive advantage through controlling customers buying power but also, it can increase its own bargaining power as well. It can be exercised by increasing the barriers for switching along with the provision of a platform for giving feedback. Through big data technology, a firm can provide competitive prices, targeted marketing strategies, and complete traveling packages as compare to competitors on competitive prices. Hence, it will get tough for the customers to switch the company due to increased prices and less information.

Threat of Substitutes

Bargaining Power of Buyer

Barraging Power of Supplier

Rivalry Among Existing Competitors

Threat of New entrants

Fig 2: Porter’s Five forces model

## *Threat of New Entrants*

It is a known fact that traveling business is getting more and more attention due to higher level of profit margins and increased demand. However, if a firm uses big data technologies, it will give a competitive advantage to the firm in the form of loyal customers, product differentiation, and economies of scale, etc. This will create an entry barrier for new companies and hence, the threat of new entrants will be reduced.

## *Threat of substitutes*

The analysis made on the basis of huge customer data and then developing the models as well marketing strategies is not that much easy to be substituted. When a travel company will provide up to date information and comparisons with its competitors then, customers will surely think before going for a firm with no such type of information.

## *Rivalry Among Existing Competitors*

As previously explained, the travel industry is facing tough completion due to many small size competitors. However, it is the lower price, introduction of new features, comparative services, and targeted advertising campaigns are few of the tools a travel firm can use by the help of big data. When rivalry will be decreased among competitors, the profit of the firm will automatically get higher by increased customer loyalty and demand (Porter).

# **Conclusion**

Although competition is getting tough in the traveling industry now a day, however, by using big data technologies, a travel company will not only get a competitive advantage but it also helps it in the value creation process. By using customer data from all type of platforms help the firm in analyzing the preferences of the customers along with their preferred locations to visit. This will help in formulating the correct type of services for a specific type of customers and hence, will decrease the marketing cost and increases the marketing ROI. Besides this, when a firm uses different social media platforms for getting feedbacks and demographic information, it will enable the firm to forecast the needs of the customers and develop the services ahead of time. Hence, it can be concluded that the use of big data technology is in utmost favor of any travel company.

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