**Cluster Analysis : Tourism Destination Decision-Making.**

**Author: Kalpataru Dhakate**

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**Title: - Cluster Analysis: Tourism Destination Decision-Making**

**Abstract: -**

Tourism is a social, cultural, and economic phenomenon that involves people travelling to countries or locations outside their usual environment for personal or business/professional reasons.

The current experiments aimed to use cluster analysis to investigate and assist couple, family, and friends in making decisions when selecting the best tourist destination for their vacation.

By examining similar decision-making strategies used by couples, friends, family, cluster analysis was chosen to demonstrate how it can be a useful technique when researching decision making.

One purpose of the current experiments was to examine how couples, family and friends in general make decisions so that it could help others to take decision based on their feedback and relation with their partners.

**Problem: -**

Making a decision while selecting tourist spot is very common problem now-a –days between young youths. Also apart from youths, when it comes to go for vacation with family or partner their might be confusion while making decision on the same. As we can see this is not solo trips almost two or more than two peoples are planning to go for vacation, So if we create such environment where our customers get the feedback from same kind of relationship with group it will be helpful for them to take decision as in which tourist spots will be better if the travellers are couple or family or friends.

Also we can add one more point here is choices of both female and male are different when it comes to go for vacation. Females may love the place where they can go for shopping’s and male select the places where they can chill. So if the groups of friends are only female then the decision making for selecting tourist spot may be different as compared to male.

Also the external factors like season, purpose of vacation can impact the decision making power of groups. For e.g. Let say group of friend (both male and female) are planning to go for goa in the month of Oct (winter) so for future customers we can recommend them Goa as a tourist spot based on past records.

**Market/Customer/Business Need Assessment: -**

Customers usually do not trust over tourism industry which can directly or indirectly can impact on tourism industry. Hence by giving them real life experience and feedbacks by past customers we can win their trust and manage and analyse customer interactions and data throughout the customer’s lifecycle, to improve business relationships with customers, assist in customer retention, and drive sales growth.

**Target Specifications and Characterization: -**

Increasing the number of a person’s need to tour has encouraged parties involved in the tourism industry to strive to provide products needed by people who do tours. S. Medlik and Middleton (1973) explains that products of tourism industry consist of various elements that become one package, inseparable with each other. They argue that there are three elements that make up tourism products, they are: 1) Objects and attractions, i.e. everything that is unique in certain areas that attract people to come visit the area, 2) Facilities, i.e. everything that is needed at a tourist destination includes basic facilities, complementary facilities, and supporting tourism facilities, 3) Accessibility, i.e. access that connects the country of origin area of origin tourists with tourist destination to the tourism objects.

In a tourist destination there are groups of people who have different condition, thus marketing efforts should also be done in different ways as well. Simply, the definition of market segmentation is to divide the market according to the nature and characteristics of the market or in accordance with consumer behaviour contained in the market, namely groups of prospective consumers based on indicators of age, gender, livelihood, culture, etc. Market segmentation is necessary because markets are heterogeneous and also it aims to determine the potential sales and profits, and determine the intensity of sales.

Once the market segmentation is identified and the profile is formed, then a decision can be made about the target market. Target market decisions are part of a marketing strategy that can be used as a reference for determining and constructing positioning strategies. Therefore, in the application target market selection is a very complex activity and needs to be consulted with the strategic marketing planning section.

After targeting the market, then the next step is to position a product on the expected target market. When doing a positioning, tourism industry should continue to search for information related to the wishes and needs of tourists who have not been fulfilled in a tourist destination.

After doing market research, the thing that needs to be done is to make the plan in accordance with the market demand and the motive of tour

Promotion consist of various communications that can be done to convey information and convince or persuade potential tourists to make a tour. Here are some kinds of promotional activities that can be done, i.e advertising, personal selling, sales promotion, brochure printing, public relations and publicity. In the delivery of information during the promotion a complete description of accessibility, facilities and infrastructure, and objects and attractions that can be done (something to do), can be seen (something to see), can be purchased (something to buy) should be given. Promotional activities should be done continuously using varied and current media.

When tourists have enjoyed the tour, then they get a variety of experiences. The task of after-sales activities in the field of tourism is to take actions that can extend or revive the sense of pleasure and satisfaction of tourists obtained while doing the tour. This can be done by providing souvenirs that describe or characterize each tourist destination.

**Bench marking alternate products: -**

In a globalized and interconnected world, and with increased leisure time, competition between tourism destinations has increased considerably. For this reason, the periodic measurement of tourism competitiveness has become a basic tool for tourism management today. It is not only necessary to determine the tourism competitiveness of destinations in a given period of time (static analysis); the continuous changes which are now occurring in the tourism industry also make it necessary to measure them from time to time (dynamic analysis).

**Applicable Regulations (Government and environmental regulations imposed by countries): -**

1. Positioning and maintaining tourism development as a national priority activity.
2. Enhancing and maintaining the competitiveness of india as a tourism destination.
3. Creation of world class infrastructure.
4. Improving existing tourism product and expanding these to meet new market requirements.
5. Developing sustained and effective marketing plans and programmes.

**Business Opportunity:**

Opportunities are endless – Whether it is for business or leisure, people will always travel. They will always need assistance from local experts to help make their stay a little easier. This means that there are endless opportunities for businesses.

Allows you to be creative – People are always looking for unique experiences that don’t conform to the regular tourist-y stuff. You can be creative with your services and provide them with one-of-a-kind experiences they won’t find anywhere else.

The industry will recover – Although it seems like no end is in sight, things will get better. With time and adjustments, the industry will recover. Rather than making plans for when things get back to normal, prove your resilience by adjusting to the times.

**Concepts Generation: -**

1. Plan :

Our aim of Data Analytics Process is to help to predict which tourist placed is loved by most of the customers. And also help other customers to choose their tourist place based on previous customers visited.

1. Prepare:

To analyse the data and to predict the tourist place loved by most of the customer we need data which is provided by company and it should have more than 10000 rows with columns like Customer\_id, Customer\_Name, Gender, Number\_of\_Travelling\_Partner, Tourist\_Place\_Visited, Package, Date\_of\_Visited, Relation\_with\_TravelledPartner.

Here the idea to get above variable is based on Column Date\_Of\_Visited we can get idea about at what season (Rain, summer, winter) customers are loving to travel at which tourist spot.

Also, Column Relation\_with\_TravelledPartner will help to get idea about Friend, Family, Spouse and their relation with tourist spot. Hence depending on this relation we can suggest the future customer to visit such tourist spot.

1. Process:

This is main step of data analytics process. After getting the data we have to get the basic info about the data, see for any null values, see for the presence of outliers, Visualized the data using different data visualization tools, Scale the data, convert the categorical data into numerical one and see the multicollinearity.

1. Analyse :

Next step is to split the data and then fit the data to different model based on where the problem is supervised or unsupervised. After fitting the data predict the result in supervised and find the silhouette score in unsupervised to see the accuracy. Here we can see the problem can be unsupervised problem as we are analysing which season, TravelPartner\_Relation with Tourist\_Place\_Visited.

1. Share:

Share the insights of the given data with the company. Also present the presentation in front of them.

1. Act:

Share the model with the company so that machine can automatically analyse the group and tourist placed the customer want to visit based on Relation with Travel Partner and season.

**Concept Development: -**

The idea of the project is to develop product so that it provide recommendations to customers to select their tourist spots. The model will help to provide recommendations based on the different variables like Traveller Partner Relation, Season, and also whether the group of travel partners are male or female. Thus model recommendations and also going through feedback of previous visited customers will help the customers to easily make their decision on selecting their tourist spot.

**Final Product Prototype:**

**Training dataset**

**Machine Learning Model – K Clustering.**

**Validation Dataset**

**B**

**A**

**Deployment**

**D**

**C**

**Product Details: -**

1. **Data sources:**

We can obtain the data from kaggle or do web scrapping to the data record.

1. **Algorithms :**

As we can see that the problem is unsupervised problem hence we will be using K-Clustering Algorithm. K-Means Clustering is an Unsupervised Learning algorithm, which groups the unlabelled dataset into different clusters. Here K defines the number of pre-defined clusters that need to be created in the process, as if K=2, there will be two clusters, and for K=3, there will be three clusters, and so on. It allows us to cluster the data into different groups and a convenient way to discover the categories of groups in the unlabelled dataset on its own without the need for any training.



1. **Team Required to develop:**
2. Data Analyst
3. Data Scientist
4. Software Developer
5. Researcher
6. Machine learning Engineer

**Conclusion: -**

Machine learning (ML) is a type of artificial intelligence (AI) that allows software applications to become more accurate at predicting outcomes without being explicitly programmed to do so. Machine learning algorithms use historical data as input to predict new output values. Machine learning is important because it gives enterprises a view of trends in customer behaviour and business operational patterns, as well as supports the development of new products. Thus the product will give them real life experience and feedbacks by past customers we can win their trust and manage and analyse customer interactions and data throughout the customer’s lifecycle, to improve business relationships with customers, assist in customer retention, and drive sales growth .

**Refereneces: -**

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