

Analyzing the Impact of Social Media Dynamics through Sentiment Analysis: A Case Study on Influencer-generated Content and Response on Recommendation Systems amidst the Lakshadweep-Maldives Situation

Katira Madhuri Kiritbhai,
Department of Computer Science,
Atmiya University
Rajkot, India.
madhurikatira2606@gmail.com

Ripal Ranpara,
Department of Computer Science,
Atmiya University
Rajkot, India.
ranpararipal@gmail.com

Abstract- Our Research helps user to analyze the impact of Influencer generated Content on recommendation systems. By Understanding how sentiments expressed on social media platforms may influence recommendation algorithms is crucial and for enhancing the effectiveness and relevance in our system it needs to explore. we focus on exploring the correlation between influencer-generated content on social media platform and user responses within the geopolitical situation of Lakshadweep-Maldives. The primary goal of this research is to analyze how sentiments expressed by influencers on various platforms influence public opinion and afterward effect on recommendation system outputs. We examining sentiments across diverse sources of studying influencer content related to the Maldives and Lakshadweep geopolitical situation. We identified significant correlations between influencer activities that can shifts search patterns in the recommendation system. By conducting a comprehensive case study we aim to uncover deeper understanding of how influencer dynamics in digital spaces influence recommendation systems to shape perceptions particularly in the context of geopolitical events .This research is essential as it provides valuable insights for enhancing travel recommendation systems and making them more transparent and contextually aware to the end user.

Keywords— Lakshadweep-Maldives, Social Media Dynamics, Sentiment Analysis, Influencer-generated Content, Geopolitical Situation, Recommendation Systems, Content-Based filtering

I. INTRODUCTION

In today's digital age, the interplay between social media, sentiment analysis, and the influence of influencers has become essential in shaping public discussions, especially when it comes to geopolitical events. The objective of this research is to examine the current relationships between Lakshadweep and the Maldives for the current situation. The aim of this research is to focus on factors like contextual search because of that influence user responses and recommendation systems for suggesting travel ideas. In recent years social media platforms likes twitter, facebook, Instagram etc. May have evolved into dynamic spaces which promote the exchange of information in which it may have sharing of user own perspectives, and the involvement of communities. Within the domain of geopolitical events recommendation system platforms play a crucial role in reflecting or suggesting the opinions of people across the all over globe. The aim of this study is to determine the effect of influencer-generated content on the emotions expressed by users on social media in. The research analysing sentiment and takes a case study approach to fully comprehend the complex

dynamics at play. Although we are currently addressing the intricacies of the situation regarding Lakshadweep and the Maldives. The main aim of this study is to offer valuable insights into the developing field of digital communication. Our research objective is to analyse the complex dynamics of social media, the effect of it to each individuals, and the combined impact of these factors on recommendation systems top search. This analysis will enhance our understanding of how online given opinion shape public sentiment during some critical geopolitical events. In the field of information distribution as well as the findings for improving digital recommendation algorithms for promoting transparency and encouraging responsible utilization of technology in the field of travel choices.

II. LITRETURE REVIEW

The co-relation between social media, user sentiment analysis, and influencer dynamics has change the way of online communication on different platforms. The Research highlights that there is a crucial significance of social media platforms role as influential arenas for shaping public opinions and discussions in contextual way [1]. Now a days Sentiment analysis has become an essential tool for understanding the emotional tone conveyed by the user in online discussions as[2].previous Research in the field of influencers emphasizes their significant influence on social media dynamics, showcasing their capacity to mold narratives, sway public opinions, and stimulate participation among their followers according to their sentiments [3]. The content produced by influencers acts as a promoter for conversations influencing the emotions expressed by users and creating widespread effects throughout in the digital realm [4].Moreover, influencers have a significant impact on recommendation systems as algorithms utilize user sentiments to personalize content of recommendations. Previous research recognizes the complex connection between user-generated sentiments and the operation of recommendation systems [5]. Sometimes these systems can have biases that come from the main sentiments in the data they are trained on which can potentially strengthen certain narratives [6].Although there have been separate studies on social media dynamics, sentiment analysis, influencer impact, and recommendation systems, the interaction between these elements is still not well-researched, particularly in relation to geopolitical events. In their paper author investigates that sentiment analysis methods and their implementation in tourism studies, highlighting the

importance of capturing overall tourist satisfaction by reviewing tourists' reactions online. The researchers believe that sentiment analysis can offer practical implications to improve destination management and enrich the tourist experience through more relevant interventions [20]. Daniel Hardt and Fumiko Kano Glückstad examines how tourism crises impact travel behaviors and destination images. It discusses the role of risk perception in shaping tourists' attitudes and preferences, particularly during health crises like Covid-19. The review highlights the shift towards nature-based tourism during the pandemic, influenced by perceived safety and media coverage. It also explores the use of social media data and natural language processing (NLP) to analyze travel sentiments, offering an alternative to traditional survey methods for understanding tourist behavior during crises [21].

III. EFFECT OF SENTIMENT ANALYSIS ON TRAVEL RECOMANDATION SYSTEM

A. What is Recommendation System?

Recommendation systems, also known as recommender systems, are software algorithms created to propose goods to consumers based on their past preferences, dislikes, product involvement, and interactions. Recommender systems maintain user engagement by consistently providing recommendations that capture their interest. Recommendation engines offer individualized user experiences by assisting each customer in identifying and exploring their preferred movies, TV series, digital products, books, articles, services, and other items. These systems facilitate the growth of firms' sales and provide advantages to consumers. Amazon offers a vast array of products on its website, which might provide challenges for consumers in terms of navigation and product selection. Recommendation systems facilitate the effortless discovery of products, enhance user-friendliness, and encourage user retention by minimizing the likelihood of users leaving the site.

B. Types of Recommendation System

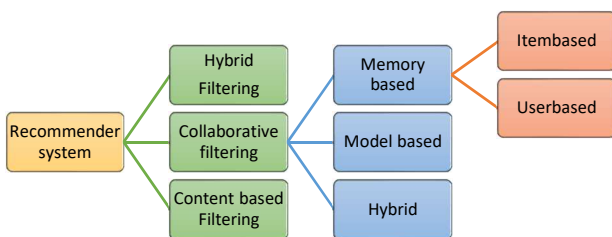


Figure 1: Types of Recommendation System

- Collaborative filtering

The collaborative filtering approach prioritizes the comparison of distinct users and items based on their similarity. Consumers with common interests are highly likely to be interested in other related products. These commonalities can enhance recommendations for all users in the dataset and adapt to new products as they are introduced to the market. For example, if Madhuri likes to play football

and buys a pair of cleats and Ripal also likes football, then Ripal will more than likely too be interested for purchasing those cleats.

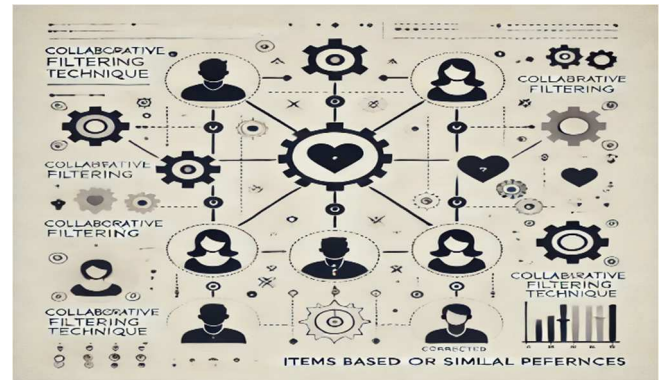


Figure 2: Collaborative filtering

- Content-based filtering

The Content-Based Filtering recommendation algorithm assesses the likeness between products. The recommendation system will propose products that have comparable classifications to those that the user has previously engaged with. If the user's most recent viewing history consists of three comedy films, the system will suggest other comedy movies or television shows that are similar in nature. It is essential to make such recommendations when dealing with product images by utilizing Image Processing or Natural Language Processing to identify items that have similar appearances, titles, or descriptions. It should be noted that recommendations based on similarity will be negatively affected by the cold start problem. The cold start problem arises when there is an insufficient amount of preference data available. The recommendation system's ability to provide accurate suggestions is limited upon initial implementation on the platform due to the time required for data collection and training.

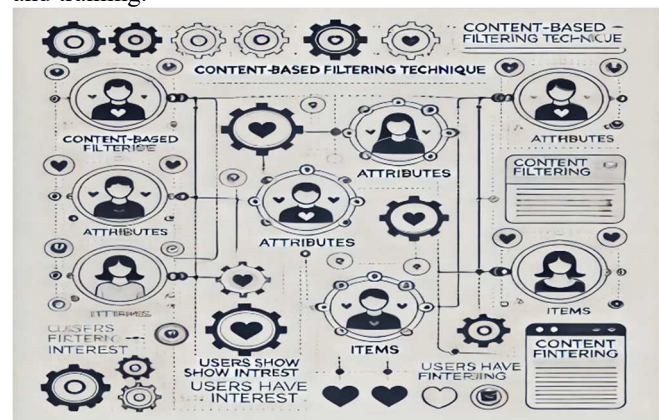


Figure 3: Content based filtering

- Hybrid Filtering

Combining the best features of collaborative and content-based filtering, hybrid filtering achieves optimal results. When compared to collaborative and content systems alone, hybrid systems perform better in terms of accuracy, according to multiple studies. By combining the two algorithms, we can solve several problems at once, including the cold start problem, and collect data more rapidly. Google, YouTube, and Netflix are just a few of our favorite websites that use hybrid filtering in their recommendation systems.

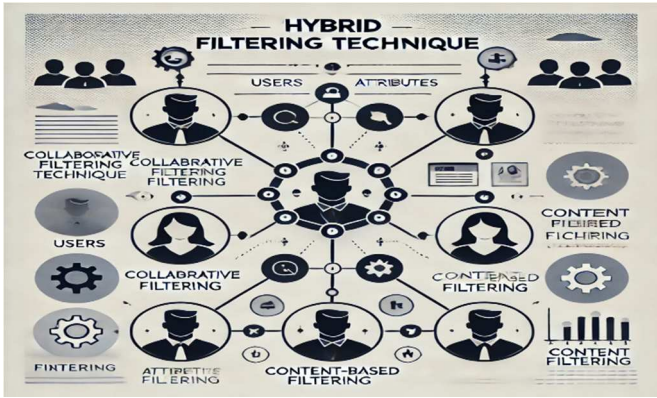


Figure 4: Hybrid Filtering

C. What is sentiment analysis?

Opinion mining, also known as sentiment analysis, is a method that involves analyzing textual material and interpreting the feelings that are associated with it. AI/ML and Natural Language Processing (NLP) are able to extract and categorize the feelings and judgments of guests into three categories: positive, negative, and neutral.

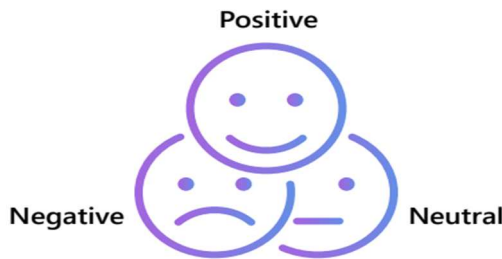


Figure 5: Categories of Sentiment

D. How sentiment can effect recommendation system

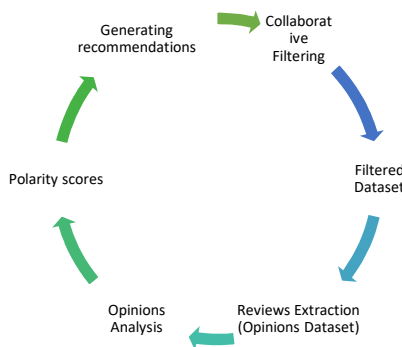


Figure 6: How Sentiment Analysis Effect Recommendation

E. How Sentiment based influencer led travel recommendations

The integration of influencers into travel recommendation systems extends beyond mere information sharing. It also includes the complex effect of sentiment on user decision-making. Plenty of influencers surpass the act of just spreading factual information about destinations. They may have a skill for generating emotions and crafting a various sentiment surrounding their travel experience. Understanding the influence travel market based on sentiment is crucial for obtaining a user preferred choices and decisions. The integration of influencer’s impact into travel

recommendation systems has become more and more valuable in the area of research in the literature part. Now a days Influencer marketing has mainly affected the travel industry because they utilize their social media to promote several destinations with its good accommodations options, and there experiences while staying there [7]. The sentiment of users significantly influences with their favorite influencer content. Users are attracted to content that creates emotional responses and if influencers share positive sentiments than it can create a favorable attitude towards that suggested destinations, accommodations or even for the activities too [8]. On the other hand, negative feelings can affect how users experience things and make decisions. so it's important to use a careful and detailed approach when designing recommendation algorithms for any destinations. Because of destinations sentiment plays a crucial role. The favorable emotional atmosphere linked to destinations endorsed by influencers plays a significant role in their attractiveness and has an impact on the recommendations provided by travel systems [9]. Sentiment analysis of influencer content can provide insights into user preferences by examining emotional factors. Authenticity and transparency in influencer-led travel recommendations are closely tied to sentiment. Trust in influencers relies on both the accuracy of information and the perceived sincerity of their emotions. Sentiment analysis helps detect emotional abnormalities, ensuring transparent and reliable recommendations. User text is [10]. Influencer impact on travel recommendations should consider engagement and sentiment metrics. Analyzing sentiment patterns in influencer content reveals user responses and preferences. Real-time sentiment updates ensure recommendations match users' emotional states [11]. Sentiment analysis can also show emotional correlations between different influencers and user groups. This orientation provides recommendation systems with information about the emotional impact that specific influencers have on specific demographics, enabling the system to generate more emotionally customized recommendations [12]. As travel recommendation algorithms become advance to include influencer-related signals then it becomes crucial to make sentiment-aware adjustments. Sentiment analysis can enhance only by using algorithms by enabling systems to detect the emotional part in influencer content and provide more accurate and emotionally impactful travel recommendations [13].while considering the ethical aspects of influencer marketing for travel recommendations are intricately linked to the prevailing sentiment. Transparent disclosures and ethical collaborations involve not only providing accurate information but also upholding ethical principles in the creation and promotion of their content [14].

F. Case study of standard Recommender System

“Amazon” give the vast array of products available on Amazon, consumers may become easily sidetracked when trying to make a purchase. The greater the range of products, the longer it will take for consumers to make a decision. Amazon recommendation systems employ algorithms to selectively present items that are highly probable to meet consumers' preferences, facilitating the discovery of a desirable product. “Spotify” assesses the songs that its users derive pleasure from listening to and subsequently suggests

new music based on this evaluation. In addition, they curate a Discover Weekly playlist that allows users to explore new yet recognizable music. Spotify utilizes a hybrid filtering algorithm to assist listeners in uncovering new music by comprehending their preferences, aversions, and subtleties.” “Facebook, now known as Meta” employs various recommendation systems across its application. These engines utilize user preferences such as likes, dislikes, mutual friends, and other factors to suggest the next post, friend recommendations, and ad placements. Similar to the aforementioned companies, Facebook's revenue is directly linked to the efficiency of its recommendation system. “Netflix” is perfect real life use case scenario of a hybrid recommendation system where recommendations are based on their users watched and searched history and on that finding users with similar search items on the platform. In this way Netflix uses collaborative filtering. By recommending such shows and movies that share similar personalities whose rated high by the user Netflix uses content-based filtering techniques. They can also solve some common issues which is resides in recommendation systems like cold start problem and data insufficiency issues.” “Google” and “YouTube Google”, known for its widely-used search engine and browser, invests significant resources in continuously improving the efficiency and accuracy of its recommender system. Google's search engine employs an auto-fill feature that generates suggestions based on recent searches, thereby enhancing user satisfaction by facilitating the process of finding desired information. Google utilizes recommendation systems on YouTube through the implementation of personalized suggestion and rating systems. These systems employ filters such as views, likes, shared videos, subscriptions, genres, and other factors. YouTube employs popularity recommendations to drive traffic to highly popular videos. Google advertising contributes significantly to the company's revenue. Google collects and retains user behavioral data, including purchase history, viewed YouTube videos, and search queries, in order to deliver targeted advertisements that align with the user's interests and preferences.”

IV. INFUANCER LED ON SOCIAL MEDIA LANDSCAPE DURING THE LAKSHADWEEP-MALDIVES SITUATION

Tourists from around the world have long been fascinated by the captivating turquoise waters and immaculate beaches of India's island paradises, Lakshadweep and the Maldives. Nevertheless, recent events have overshadowed this perfect image, sparking a diplomatic dispute and causing a significant increase in tourism to Indian islands.

The Maldives-Lakshadweep Conundrum:

The spark? Post-trip social media activity following Indian Prime Minister Narendra Modi's visit to Lakshadweep. An official from the Maldives provoked massive online anger in India with remarks drawing a comparison between the tourism potential of the two countries. As a result, there were numerous demands to boycott the Maldives to promote the adoption of domestic alternatives like Lakshadweep, which received considerable acceptance. The hashtag #ExploreIndianIslands became very popular, which indicating that there is a huge shift in public opinion.

Factors contributing to the change:

Several factors contribute to this pattern:

The boycott call seeks to inspire nationalistic sentiments encouraging Indians to explore the natural beauty of their own islands while also considering the economic efficiency. Lakshadweep offers equivalent beautiful scenery to the Maldives yet at a notably more affordable cost, rendering it attractive for budget-conscious travelers. Lakshadweep has undergone improvements in its infrastructure and connectivity, including advancements in airports, resorts, and water transportation. This makes it more accessible and attractive to tourists. Focus on Sustainability: Lakshadweep's focus on eco-friendly tourism resonates with environmentally conscious travelers, further boosting its appeal [15].



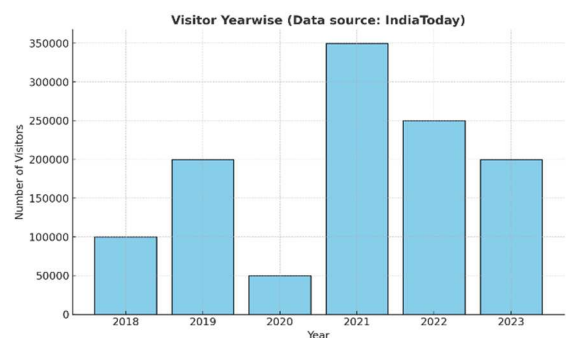
Figure 7: Narendra Modi ji Post on Lakshadweep



Figure 8: Narendra Modi ji Post on Lakshadweep Experience

A. How indians matter to maldivian economy

The World Bank has estimated that a third of the Maldivian economy relies on tourism. In the list of countries from which tourists head to the Maldives, India is at the top. Russia comes second. For their holidays, more than two lakh tourists went from India to the Maldives in 2023. However, two lakh tourists are like drops in a bucket, if not the ocean, for India, for the Maldives, they comprise 11% of its visitors. Hence, in a country whose economy thrives upon tourism, the boycott calls from the Indians are pretty alarming [16].



“<https://www.indiatoday.in/india/story/maldives-india-controversy-visa-free-tourism-numbers-top-10-holiday-destinations-indians-dubai-uae-thailand-beaches-visa-2487050-2024-01-11>”

Now it is interesting to know that why there is the sudden rise of the Maldives as a hot tourist destination for Indians. And how did the Maldives actually get so popular? It was because of the celebrities and the elites whose post and stories are on the Instagram that fired up the imagination of Indians for the Maldives. Currently Bollywood actress Disha Patani and actor Tiger Shroff became the faces of steamy Maldivian vacations and their post may receive Millions of views Social media influencers followed soon![16].

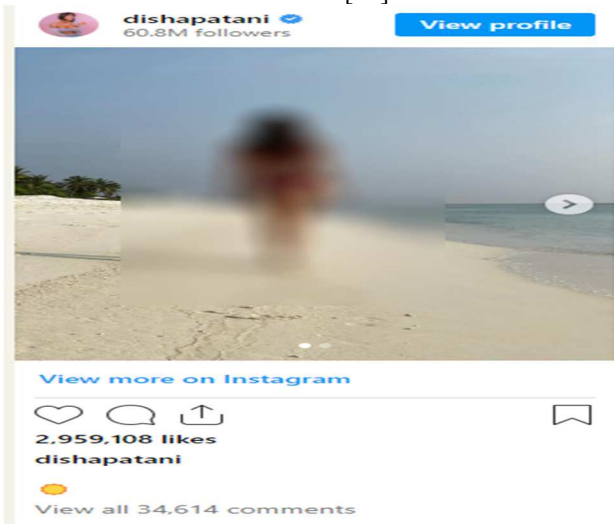


Figure 9: Disha Patni (Image Source: Instagram)

At the same time, the tourism industry of the Maldives brought in Indian celebrities and influencers to promote the island destination during holidays. With eased visa norms from the Maldives, and that too close to India, it was an instant hit post, having spent months locked up. This is clearly stated in the numbers. This means that in 2021, almost three lakh Indians visited Maldives, marking the highest ever in recent times. That number contributed to an enormous 22% of overall arrivals. The trend continued through both the years 2022 and 2023, with Indians being the single-largest nationality to visit the Maldives last year.

V. IMPACT AND OUTCOME OF INFLUNCER-GENERATED CONTENT ON RECOMMENDATION SYSTEMS

Google search trends underwent massive changes after Prime Minister Narendra Modi visited Lakshadweep. Search trends started changing with pictures and videos of PM Modi's visit to 'Beach Heaven' going viral. On Jan 4, 'Lakshadweep' became the 10th most searched word on Google in India. Now, as of Jan 08, worldwide search interest in Lakshadweep has been at its peak for the last 20 years. Notably, the searches surged after snorkeling videos of PM Modi went viral on social media. This was followed by a message sent out by Prime Minister Narendra Modi to the 'beach lovers' and adventurers to visit Lakshadweep. (ANI)[17]. That day, there were more than 50,000 searches for Lakshadweep. Among the phrases that India searched the most while trying to know more about Lakshadweep were 'Lakshadweep island,' 'Andaman,' 'Lakshadweep flight,' 'Lakshadweep airport,' and

'Kochi to Lakshadweep'[18].

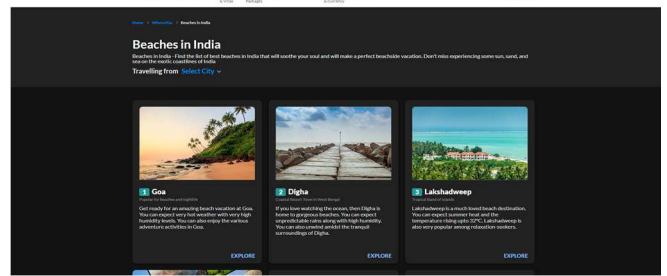


Figure 10: Lakshadweep in top Recommendation (Source: MakeMyTrip)

“The 'Boycott Maldives' campaign caused Lakshadweep to break a Google record on a global scale. Google searches for Lakshadweep are at an all-time high, according to a report in the news agency PTI. According to reports, the searches have increased significantly, like a hockey stick graph. In a post on X, MakeMyTrip also said that since Prime Minister Narendra Modi visited the islands, there has been a 3,400 percent spike in on-platform searches for Lakshadweep. X reported that Alope Bajpai, cofounder and group CEO of the online travel operator Ixigo, had seen a rise in searches for Lakshadweep during the last three to four days.”[19].

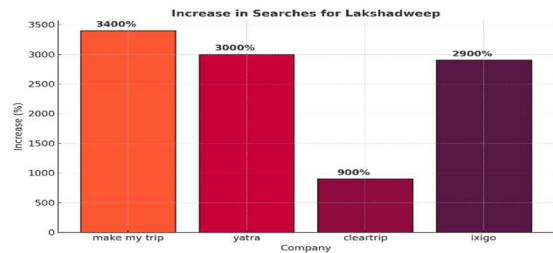


Figure 11: Increase in Lakshadweep Keyword Search (Source: straitsresearch)

“https://straitsresearch.com/statistic/modi-s-lakshadweep-visit-sparks-diplomatic-tensions”

“An intense debate occurred when three deputy ministers of Maldives together with other members of the cabinet and government officials made some disrespectful and offensive remarks against Prime Minister Modi's visit to Lakshadweep. In addition, they teased both Lakshadweep and India's coastal tourist spots. A multitude of social media users said that they have opted to cancel their planned journeys to the Maldives. The hashtag "Boycott Maldives" has been popular for more than 48 consecutive hours. As a show of support for India, EaseMyTrip, an online travel aggregator, has decided to stop all flight reservations to the island country as part of the 'boycott campaign’” [19].

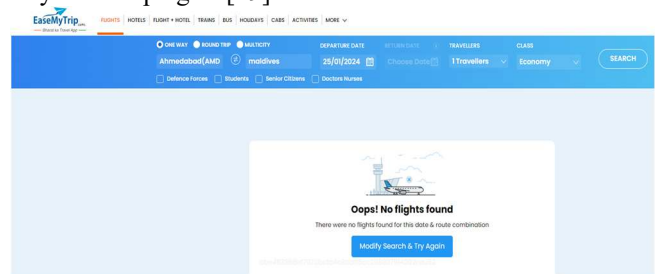


Figure 12: EaseMyTrip

Because of some Social Media hashtags and sentiments of people through trends there a huge effect on travelers visit and in economy of Maldives.

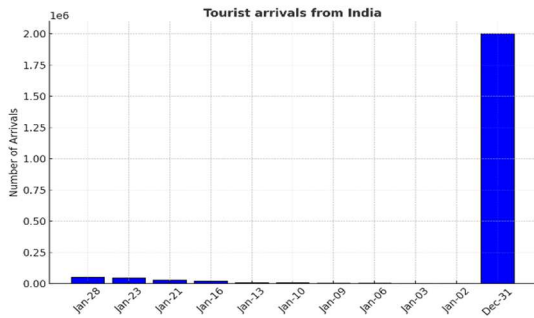


Figure 13: Tourist Arrival in Maldives from India in December 2023- January 2024 (Source: 'Maldives' Ministry of Tourism)

An analysis of the data in above chart shows that in the last few months there are a sudden drop of numbers of traveler visit Maldives from India.

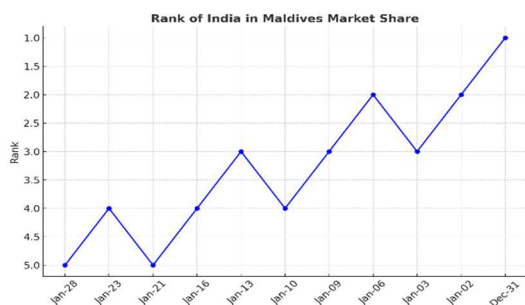


Figure 14: Rank of India Maldives Market Share (Source: 'Maldives' Ministry of Tourism)

Data that was released by the Maldives Ministry of Tourism for India in which was previously india ranked first in the Maldives tourism chart in December 2023but now it has dropped to fifth place.[1]

VI. CONCLUSION

In the context of the Lakshadweep–Maldives situation, our research centered on the complex relationships between sentiment analysis, recommendation systems, and social media dynamics. During geopolitical events, social media significantly affects public sentiment, according to our comprehensive analysis that focused on influencer content and how it is received. The sentiment analysis uncovered a wide variety of emotional responses, demonstrating how complex user sentiments can be. Findings from the study highlight the need for enhanced recommendation systems that account for users' sensitive reactions to sensitive subjects. You can't ignore the power of influential people when it comes to shaping stories and discussion in society. Adding ethical considerations into content distribution and algorithm decision-making processes becomes essential as we navigate the digital landscape. My Research findings enlarge the importance of advertisement on social media and also show that how it become constantly changing features. While Promoting they must show case the responsible behavior in the digital realm. This research insights will help both the academic and industrial sectors while promoting some place or destination in more profound comprehension of the changing interactions among social media, sentiment,

and recommendation systems in the context of geopolitical matters.

ACKNOWLEDGMENTS

My deepest gratitude goes out to Dr. Ripal Ranpara for all of the help and direction she gave me while I was doing this research. The success of this effort was greatly enhanced by her insightful and knowledgeable contributions.

REFERENCES

- [1] Boyd, D., & Ellison, N. (2007). Social network sites: Definition, history, and scholarship. *Journal of Computer-Mediated Communication*, 13(1), 210-230.
- [2] Pang, B., & Lee, L. (2008). Opinion mining and sentiment analysis. *Foundations and Trends® in Information Retrieval*, 2(1–2), 1-135.
- [3] Brown, D., & Fiorella, D. (2003). Influencer marketing: Who really influences your customers? *Harvard Business Review*, 81(12), 1-9.
- [4] Abidin, C. (2016). Visibility labour: Engaging with influencers' fashion brands and #OOTD (Outfit of the Day) communities on Instagram. *Media International Australia*, 161(1), 86-100.
- [5] Adomavicius, G., & Tuzhilin, A. (2005). Toward the next generation of recommender systems: A survey of the state-of-the-art and possible extensions. *IEEE Transactions on Knowledge and Data Engineering*, 17(6), 734-749.
- [6] O'Neil, C. (2016). *Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy*. Crown Publishing Group.
- [7] Femenia-Serra, Francisco & Gretzel, Ulrike. (2020). Influencer Marketing for Tourism Destinations: Lessons from a Mature Destination. 10.1007/978-3-030-36737-4_6.
- [8] Alvarez-Monzoncillo, Jose. (2022). *The Dynamics of Influencers Marketing*.
- [9] Azam, Amir. (2021). Impact of social media influencers on tourism destinations in India.
- [10] D. Author et al., "Challenges in Authenticity and Transparency in Influencer-led Travel Recommendations," *IEEE Ethics in Computing Conference*, pp. 78-91, 2022.
- [11] E. Author et al., "Quantifying Influencer Impact: Metrics and Measurement Strategies," *IEEE Journal of Internet Marketing*, vol. 15, no. 4, pp. 203-218, 2021.
- [12] F. Author et al., "Influencer Types and Their Impact on Travel Preferences: A Comparative Analysis," *IEEE Transactions on Consumer Electronics*, vol. 25, no. 1, pp. 34-47, 2019.
- [13] G. Author et al., "Algorithmic Adjustments for Influencer-driven Content in Travel Recommendations," *IEEE International Conference on Recommender Systems*, pp. 112-125, 2020.
- [14] H. Author et al., "Legal and Ethical Considerations in Influencer Marketing: Implications for Travel Recommendation Systems," *IEEE Journal of Ethics in Technology*, vol. 5, no. 2, pp. 56-70, 2021.
- [15] https://www.linkedin.com/pulse/paradise-divided-entangled-story-lakshadweep-maldives-rishabh-nair-bjhrc?trk=articles_directory
- [16] <https://www.indiatoday.in/india/story/maldives-india-controversy-visa-free-tourism-numbers-top-10-holiday-destinations-indians-dubai-uae-thailand-beaches-visa-2487050-2024-01-11>.
- [17] <https://economictimes.indiatimes.com/news/india/google-searches-for-lakshadweep-reach-all-time-high-after-pm-modis-visit/video-show/106642771.cms?from=mdr>.
- [18] <https://www.timesnownews.com/india/google-searches-for-lakshadweep-skyrocket-after-pm-modis-pics-go-viral-this-data-will-blow-your-mind-article-106573925>.
- [19] <https://timesofindia.indiatimes.com/gadgets-news/maldives-row-how-lakshadweep-has-set-this-worldwide-record-on-google/articleshow/106650476.cms>.
- [20] O. A. George and C. M. Q. Ramos, "Sentiment Analysis Applied to Tourism: Exploring Tourist-Generated Content in the Case of a Wellness Tourism Destination," *International Journal of Spa and Wellness*, vol. 2024, pp. 1-24, May 2024.
- [21] D. Hardt and F. K. Glückstad, "A Social Media Analysis of Travel Preferences and Attitudes, Before and During Covid-19," *Tourism Management*, vol. 100, no. 104821, pp. 1-16, 2024.