



Exploring Online Community Search Interest on Temporal Dynamics of Ayodhya: A Case Study of the Ram Mandir based on Google Search Trends Insight

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In the digital age, online platforms have become essential tools for understanding societal interests and trends. Google Trends, a widely used platform, provides valuable insights into search behaviour by tracking the popularity of specific search terms over time and across geographic locations. The present paper explores the utility of Google Trends in analysing the search interest in the "Ram Mandir" topic, particularly focusing on its relevance in understanding societal sentiments, public discourse, and information-seeking behaviours. Ram Mandir's temporal variations in online search interest are examined through Google Trends data from 2008 to 2023. The objectives include examining variations in search interest across different periods, forecasting temporal trends, analysing geographical variations, and identifying relevant search queries and topics. Statistical and machine learning models were employed for trend forecasting, including AutoARIMA, Random Forest, Support Vector Regression (SVR), and Neural Network. The study revealed consistent but intermittent fluctuations in search interest within India, with Support Vector Regression demonstrating superior performance. Conversely, global interest remained steady, reflecting sustained but moderate engagement. Geographically, regions such as Jharkhand, Uttar Pradesh, and Madhya Pradesh showed the highest search interest, possibly linked to cultural or historical connections. Analysis of related search queries unveiled multifaceted dimensions, encompassing religious, historical, political, and infrastructure themes. Furthermore, this study addresses research gaps by utilising Google Trends to investigate cultural phenomena and religious landmarks, offering insights into digital representations of cultural discourse. This study contributes to understanding the interplay between digital media, culture, and society, shedding light on the evolving nature of public discourse in the digital era.

Keywords: Google Trends, Ram Mandir, Temporal Dynamics, Search Interest, Cultural Phenomena, Statistical Models and Machine Learning.

INTRODUCTION

In today's digitally-driven era, intertwining religion and digital spaces has surfaced as a pivotal realm of scholarly interest. Within this multifaceted landscape thrives a community colloquially termed "Digital Devotees". This group is characterised by their steadfast commitment to expressing their spirituality through the myriad channels afforded by the digital world.

A search trend refers to the popularity and frequency of specific search queries entered into any search engine over a defined period. It provides insights into what topics or keywords people are interested in and how their interest fluctuates over time. Google Trends, an analytical tool par excellence, empowers users to dissect the popularity

of search queries across diverse temporal and geographic spectrums. It is a testament to the dynamic nature of public interest, making it an invaluable resource for this study¹. Google Trends data is not just about predicting the future; it is also valuable for anticipating the present².

This paper focuses on the Ram Mandir, a temple complex in Ayodhya, India, esteemed for its profound spiritual, cultural, and historical significance. The Ramayana, an Indian epic, has inspired generations with its message of good prevailing over evil. Lord Ram embodies values like truth, compassion, sacrifice, and just rule, making him a timeless symbol³. The Ram Mandir is more than a mere architectural marvel; it is a sacred site that venerates Lord Ram, attracting legions of devotees from around

the globe⁴. As described in the Valmiki Ramayana epic, Ayodhya is linked to Lord Rama's birthplace. During the Gupta Empire, it served as the capital. However, in medieval times, it fell under Mughal rule, with Babur's general, Mir Baqi, constructing the Babri Masjid in 1528, potentially on the site of a previous temple dedicated to Lord Rama⁵.

Recently, this reverence has transcended physical boundaries, permeating the digital sphere. Here, Google Trends emerges as a pivotal tool, lending its prowess to analysing evolving patterns of public interest, a subject of notable relevance in the realm of library and information science. Breyer & Eisenberg⁶ stated that Google Trends is renowned for its capacity to rapidly and comprehensively offer temporal and geographic data derived from a vast array of search queries, which are also complimentary in nature. In addition, according to Carneiro & Mylonakis⁷, it has significant potential as a sensitive, robust, and efficient monitoring system.

In the academic discourse, Sinha⁸ champions a reimagined architectural narrative for the Ramjanmabhoomi site, advocating for a design ethos that weaves collective memory and cultural lore into the very fabric of the landscape. Similarly, Lamichhane⁹ delves into the challenges Hindu communities face in embedding their sacred spaces within the urban tapestry of the Greater Toronto Area. The study underscores the temples' vital role in safeguarding cultural heritage and proposes a nuanced approach to temple siting. The 'Ram Janmbhumi' and 'Ram Mandir' dominated discussions across all social media platforms, reflecting their status as one of the most significant issues in the country. Given the importance of understanding the trends surrounding Lord Ram, this study aims to analyse Google Trends data, considering Google's widespread use as the primary search engine worldwide.

While many studies were conducted, primarily focused on health, consumer behaviour, financial markets, and global crises, there is a noticeable dearth of studies utilising Google Trends to investigate cultural phenomena and religious landmarks. Previous studies have not explicitly examined the temporal dynamics aspect of Ayodhya and the Ram Mandir, which is deeply intertwined with India's cultural, religious, and socio-political aspects. This research gap presents an opportunity to explore the potential of Google Trends in understanding the temporal variations in public awareness of significant cultural landmarks and events, such as the Ram Mandir in

Ayodhya, and their cultural importance. Statistical models such as AutoARIMA, Random Forest, Support Vector Regression (SVR), and Neural Network to analyse Google Trends data, providing insights into the temporal variations in public awareness regarding Ram Mandir. These models offered a sophisticated analysis of search interest over time, capturing the complex patterns of public engagement and interest in the topic. This novel approach addresses a thematic void in a complete work of literature and demonstrates the versatility and broad use of Google Trends across several areas of study.

REVIEW OF LITERATURE

Carneiro and Mylonakis⁷ pioneered the exploration of Google Flu Trends, uncovering its capability for early detection of influenza outbreaks, thereby signifying a milestone in sensitive surveillance methodologies, predominantly in developed nations. This paradigm of timely outbreak tracking through specialised tools was further corroborated by Cook et al.¹⁰, who emphasised the alignment of Google Flu Trends with anonymised internet search activities to estimate influenza activity, thus underscoring its strong correlation with official surveillance data. Carriere-Swallow and Labbe¹¹ extended the utility of Google search queries to consumer behaviour in emerging markets like Chile, particularly automobile purchases. Notably, despite the low internet penetration, their work exhibited how the Google Trends Automotive Index could enhance new casting models, surpassing traditional benchmarks in precision and efficiency. In a financial context, Preis et al.¹² innovatively proposed analysing Google query volumes to decipher financial market behaviours during crises, suggesting these patterns as potential precursors to market fluctuations. Nuti et al.¹³ performed a systematic review of the application of Google Trends in healthcare research, revealing an exponential increase in relevant publications and delineating the diverse objectives of these studies. However, they highlighted a pressing need for methodological rigour for replicability and reliability. In their critical evaluation of Google Trends' reliability across various clinical scenarios, Cervellin et al.¹⁴ found that the platform's low dependability was impacted mainly by media coverage and did not show any association with the epidemiology of specific diseases. Jun et al.¹⁵ used Google Trends to analyse research trends thoroughly. They found the

tool's many uses and saw a paradigm change away from descriptive studies and toward predictive analytics. Mavragani *et al.*¹⁶ identified the underutilisation of the tool's predictive power in their thorough analysis of Google Trends' application in health-related areas. Yu *et al.*²² developed an online model that forecasts oil consumption using Google Trends, proving its superiority over conventional techniques. Ayyoubzadeh *et al.*¹⁷ and Effenberger *et al.*¹⁸ utilised Google Trends data to predict COVID-19 incidence and assess public interest in coronavirus infections, respectively, highlighting its predictive utility in pandemic scenarios. Adamczyk *et al.*¹⁹ validated the effectiveness of internet data in cross-national religious studies, while Brodeur *et al.*²⁰ explored the pandemic's impact on mental health using Google Trends. Satpathy *et al.*²¹ employed Google Trends to track the progress of the COVID-19 virus in India and revealed its relationship with testing and case numbers.

OBJECTIVES

1. To examine variations in Ram Mandir-related search interest on Google throughout various periods.
2. To forecast and analyse the temporal trends of Ram Mandir-related search interest.
3. To discover the geographical variations in searching for information about the Ram Mandir.
4. To analyse the temporal trends of the Google search queries and find relevant subjects and inquiries.

METHODOLOGY

This study employs a quantitative methodology to examine the digital interest surrounding the "Ram Mandir" topic by utilising Google Trends data. To

initiate data extraction, the search query "Ram Mandir" is utilised along with relevant search terms. The data was retrieved and saved on January 6, 2024, covering the period from January 1, 2008, to December 31, 2023. The study has a broad geographical reach, encompassing national (India) and global (Worldwide) perspectives. This dual approach offers a comprehensive understanding of the cultural significance of Ram Mandir, both within and beyond India. It enables a comparative examination of the local and global interest in the subject matter. The search categories selected for analysis are "All Categories" and "Web Search". The investigation will moreover investigate related inquiries and topics to offer a more thorough understanding of the discourse around Ram Mandir. The following mechanism was used for identifying the Google trends:

A Python library was employed to plot data on the world map, and MS Office GeoNames tools were utilised to map data specific to the India map. The present study uses statistical and machine learning models for Google Trends forecasting. For prediction modelling to forecasting, the following steps are followed:

DATA ANALYSIS AND INTERPRETATIONS

Figure 1 represents a chronological record of search interest levels for "Ram Mandir" within India and on a worldwide scale measured monthly. According to Google Trends, "Interest over time" shows how many searches were made for a specific term compared to the total number of Google searches over a certain period. It shows the relative popularity of a topic over time. A score of 0 signifies inadequate data for this phrase, while a score of 50 indicates half the level of popularity and a score of 100 marks the term's highest point of popularity. Each data point,

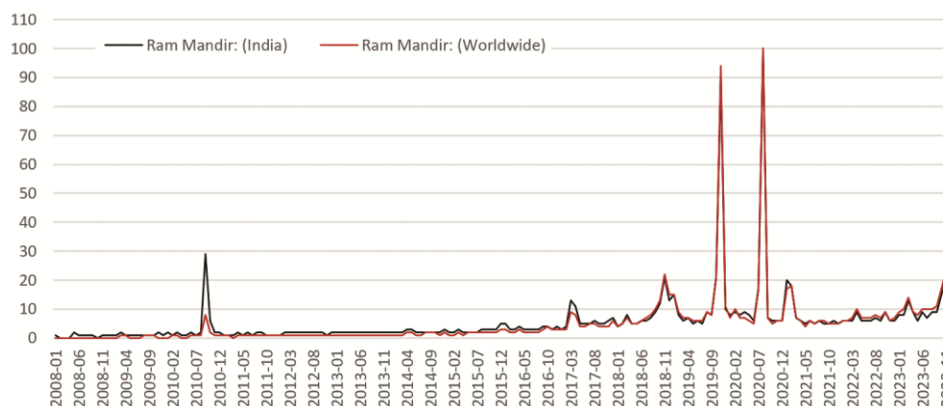


Figure 1 — Google Trend search interest over time

which is probably standardised within this range, records the frequency of search queries for a specific time interval.

In India, the average search interest for the selected months is 2.0, with a calculated standard deviation of 0.89. This slight deviation from the average indicates a generally consistent level of interest with occasional fluctuations attributed to specific events or media coverage affecting public attention or discussion. The presence of outliers within this sample does not substantially impact the data, as indicated by the median value 2.0. This further reinforces the stability of this interest. The global mean search interest is 0.94, with a significantly smaller standard deviation of 0.17. This signifies a slight reduction. This indicates a more uniform level of interest, with minimal deviation from the mean, suggesting that the global attention to "Ram Mandir" remains relatively subdued and consistent over time. The median, mirroring the mean, stands at 1.0, reinforcing the data's lack of skewness and the worldwide audience's steady but tepid engagement with the topic.

Figures 2 and 3 illustrate that the performance of the forecasting models varied significantly when analysing the search interest levels for "Ram Mandir" through Google Trends data, both within India and globally. For the Indian dataset, Support Vector

Regression (SVR) demonstrated the highest accuracy with the lowest Mean Squared Error (MSE) of 80.42, indicating its effectiveness in capturing the complex, non-linear search patterns prevalent within India. On a worldwide basis, Neural Networks outperformed other models, achieving the lowest MSE of 102.78, which suggests its superior capability in modelling the intricacies of global search behaviours. Interestingly, while AutoARIMA and Random Forest models showed higher MSEs in both contexts, indicating lesser accuracy, the shift in their performance from local to global datasets highlights the varying dynamics of search interest patterns across different geographies.

In examining the forecast data (figure 4) for "Ram Mandir" search interest levels within India, notable variations emerge across the four forecasting models: AutoARIMA, Random Forest, SVR, and Neural Network. AutoARIMA projects a fluctuating trend, with search interest levels oscillating between 14.38 and 27.03 from January to December 2024. Similarly, Random Forest maintains a consistent forecast of 27.12 throughout the year, indicating stability but potentially overlooking nuanced changes in search behaviour. SVR, with the lowest Mean Squared Error (MSE) of 80.42, anticipates a gradual decline in search interest, starting at 5.03 in January and

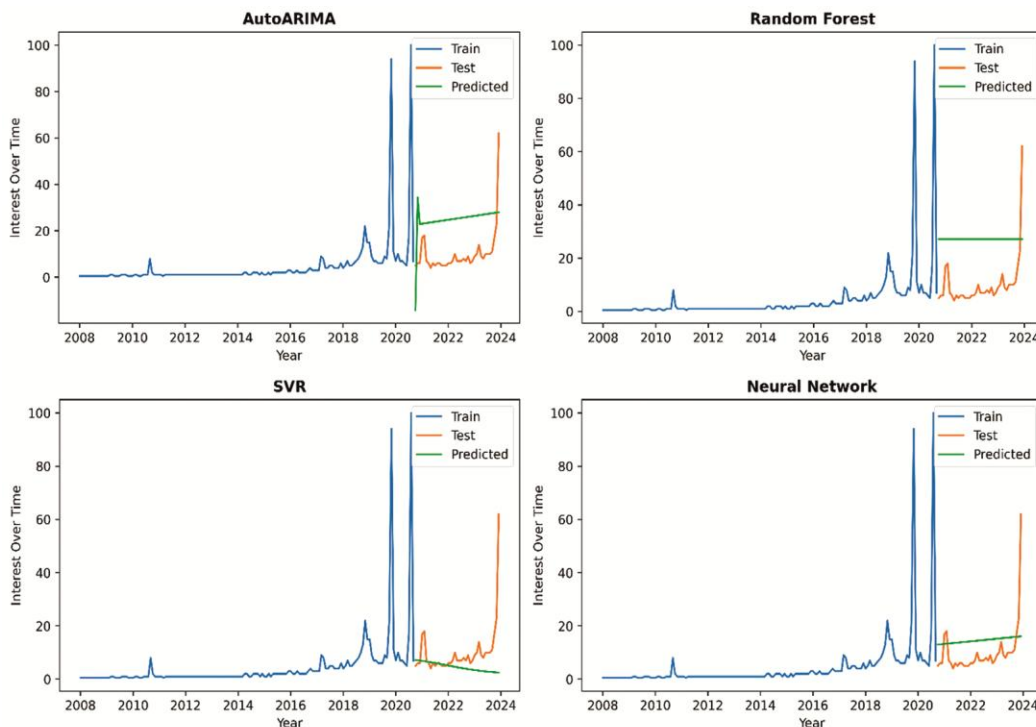


Figure 2 — Prediction models for Interest over time (Worldwide)

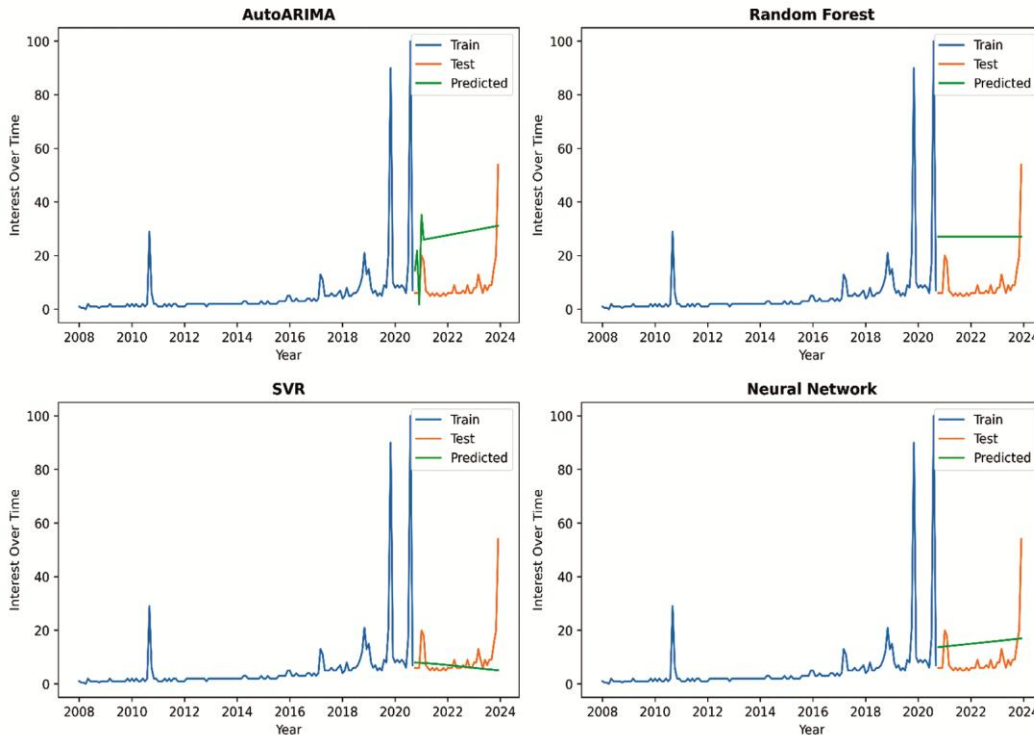


Figure 3 — Prediction models for interest over time (India)

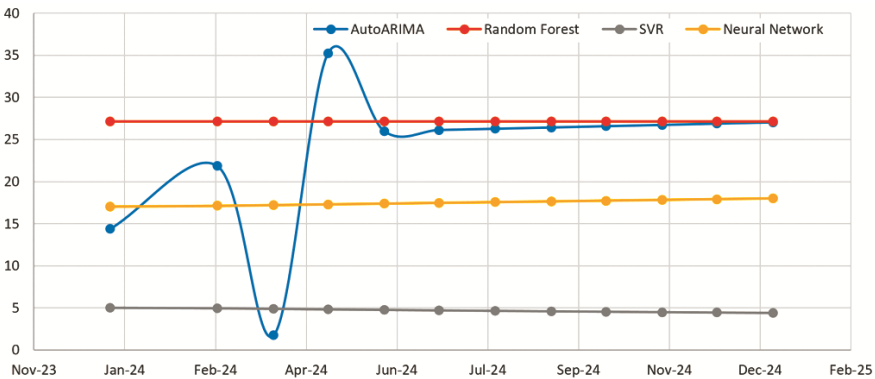


Figure 4 — Projected Search Interest Trends for 'Ram Mandir' Within India

decreasing to 4.40 by December. Conversely, Neural Network forecasts a slightly more dynamic pattern, with search interest levels ranging from 17.04 to 17.98 over the same period. These projections underscore the divergent approaches of each model in capturing the anticipated trajectory of "Ram Mandir" search interest within India. While AutoARIMA and Random Forest offer steady forecasts, SVR and Neural Network showcase a more nuanced understanding of potential fluctuations, reflecting their superior predictive capabilities in this context.

As per Figure 5, the worldwide Google Trends search interest forecast analysis, the Neural Network

model takes precedence with the lowest Mean Squared Error (MSE) of 102.78. Across the forecast period from January to December 2024, the Neural Network predicts a gradual increase in search interest levels for "Ram Mandir," ranging from 16.15 to 17.04. This suggests a sustained global interest in the topic, with minor fluctuations.

Figure 6 states that the Google Trends dataset, illustrating regional search interest in "Ram Mandir" across India, employs a scale from 0 to 100 to quantify relative popularity. This scale represents the aggregate of searches for the specified term about all searches conducted in each region of India. It does not

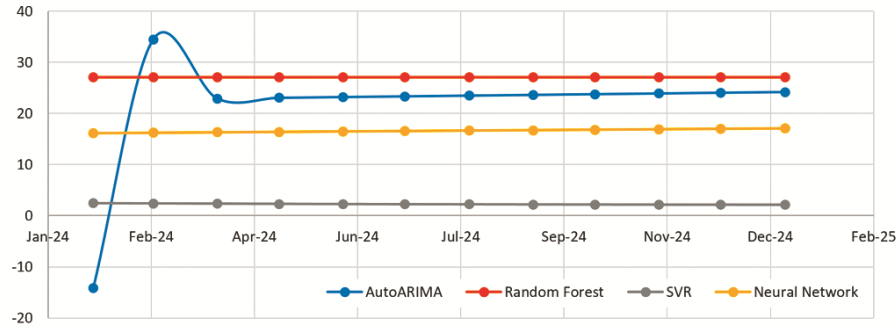


Figure 5 — Projected Global Search Interest Trends for 'Ram Mandir'

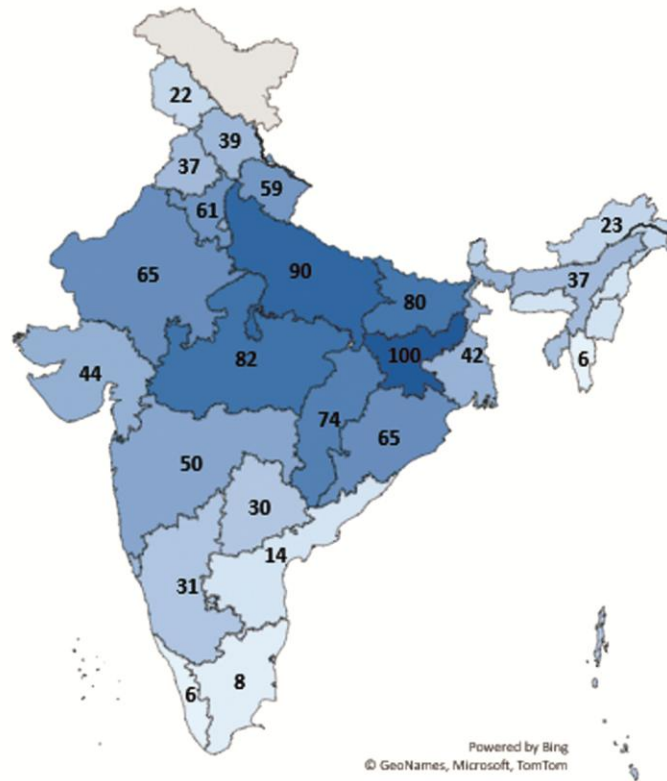


Figure 6 — Regional distribution of 'Ram Mandir' Search Interest across India

indicate the exact number of inquiries. A region's maximum popularity is denoted by a score of 100, whereas a score of 50 represents half of that value. According to the data, Jharkhand has the highest relative interest score of 100, with Uttar Pradesh and Madhya Pradesh following closely behind. The elevated ratings indicate a stronger regional connection to the subject, possibly due to shared political, cultural, or historical experiences. In contrast, regions like Tamil Nadu and Kerala demonstrate minimal interest (with ratings as low as 6 and 5, respectively), indicating significant discrepancies in the cultural importance of media

coverage given to "Ram Mandir". The information highlights the role of diverse cultural and socio-political backgrounds in shaping India's regional diversity when debating national matters.

The Figure 7 dataset assesses the global interest in "Ram Mandir" from January 1, 2008, to December 31, 2023, and employs a relative metric to gauge search interest across diverse countries. A score of 100 signifies the utmost comparative popularity of a search phrase inside a specific location regarding its overall search traffic. Google Trends uses a numerical scale from 0 to 100 to measure and quantify the level of interest. This methodology prioritises the

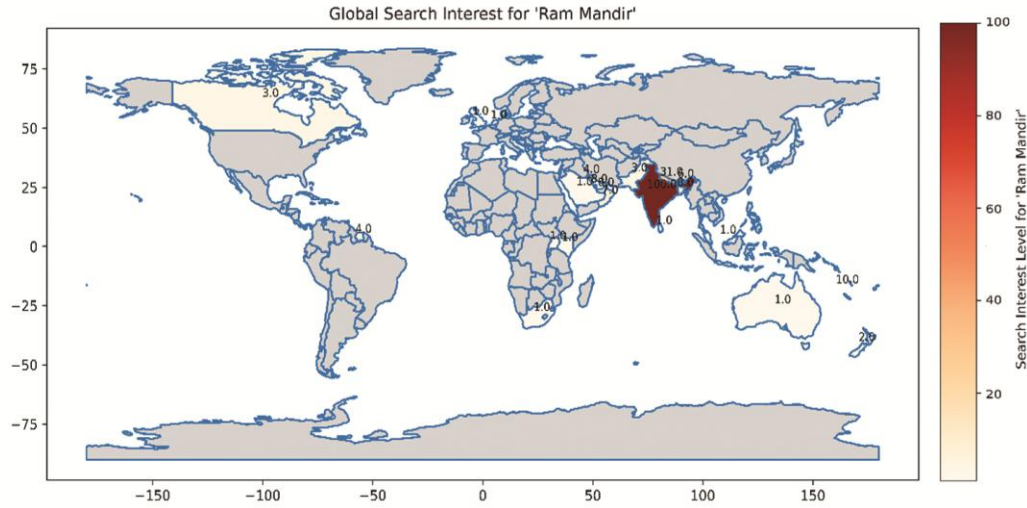


Figure 7 — Global Search Interest for 'Ram Mandir' across different countries of the world

proportion of specific searches rather than their precise quantities, allowing for a fair comparison between places with varying search volumes. Consequently, although the larger country may have a more significant overall number of searches, a smaller country with a significant proportion of searches for a specific term can obtain a higher score than the former.

India holds the top position with a score of 100, signifying the highest relative interest level in "Ram Mandir". The peak score emphasises the topic's significant historical, religious, and cultural importance within the Indian context. Nations such as Nepal (with a score of 31) and other South Asian countries exhibit significant interest levels, likely influenced by their cultural and religious traditions. The collection also reveals compelling patterns in global involvement. The interest exhibited by nations such as Fiji, Mauritius, and Trinidad and Tobago, which possess substantial Indian diaspora populations, underscores the significance of diaspora communities in maintaining connections to their cultural heritage. In contrast, Western nations such as the United States, Canada, Australia, and the United Kingdom, as well as regions with less significant cultural connections to India, exhibit minimal interest.

Table 1 presents a comparative analysis of Google Trends data on "Ram Mandir," exploring similar topics of interest globally and specifically in India. This analysis provides valuable insights into the different aspects of interaction with this subject. The dataset covers January 1, 2008, to December 31, 2023. It uses a relative scale ranging from 0 to 100, with a score of 100 indicating the highest relative popularity of a search phrase.

Table 1 — Trending topics within India and Worldwide

S.N.	Top trending topics worldwide	Top List	Top in India	Top list
1.	Hindu Temple	100	Hindu Temple	100
2.	Rama	81	Rama	89
3.	Ram Janmabhoomi	55	Ram Janmabhoomi	64
4.	Ram Mandir	48	Ram Mandir	48
5.	Ayodhya	41	Ayodhya	41
6.	Mosque	4	Mosque	4
7.	Babri Masjid	3	Babri Masjid	4
8.	Donation	3	Donation	3
9.	Construction	3	Construction	3
10.	Distance	3	Ram Mandir	3
11.	Puja	2	Puja	3
12.	Bhajan	2	Narendra Modi	2
13.	Train station	2	Verdict	2
14.	Ram Mandir	2	Inauguration	2
15.	Narendra Modi	2	Bhubaneswar	1
16.	Court	2	Temple	1
17.	Delhi	2	Supreme Court of India	1
18.	Verdict	2	Sri Ram Temple	1
19.	Mumbai	2		
20.	Uttar Pradesh	2		
21.	Hanuman	1		
22.	Inauguration	1		
23.	Bhubaneswar	1		

On a global scale, the "Hindu Temple" holds the highest position on the list, scoring 100, indicating its significant importance in the "Ram Mandir" discussions. This phenomenon is also observed in the Indian context, where the term "Hindu Temple" receives a perfect score of 100, highlighting its supreme significance at the national level. The lists

prominently feature topics such as "Rama", "Ram Janmabhoomi", "Ram Mandir", and "Ayodhya", suggesting a significant global and national interest in the historical and religious narratives linked to Ram Mandir.

In India, the prominence of subjects such as "Narendra Modi", "Verdict", and "Supreme Court of India" underscores the political and legal aspects of the Ram Mandir controversy. This incorporation demonstrates a thorough involvement beyond religious concerns, including legal, political, and infrastructural components. In contrast, the global list covers a broader range of subjects, such as "Mosque", "Babri Masjid", and "Donation", indicating an interest in the historical background and current progress of the temple. The worldwide interest also encompasses geographical and infrastructural elements, with subjects such as "Train station", "Delhi", "Mumbai", and "Uttar Pradesh" becoming increasingly important. This indicates an inquisitiveness regarding the broader geographical and logistical framework, including Ram Mandir.

The dataset labelled Table 2, obtained from Google Trends, has a comprehensive list of search queries linked to "Ram Mandir" globally and in India. This dataset provides valuable information about the particular parts of the topic that generate the highest level of interest. The data indicates the comparative popularity of these queries and is ranked on a scale from 0 to 100. "Ayodhya Mandir" holds the top position globally with a score of 100, while "Ayodhya Ram Mandir" and "Ayodhya" are listed closely behind. This indicates a notable global interest in the temple and its whereabouts. In the Indian context, both "Ayodhya" and "Ram Mandir Ayodhya" are highly ranked, suggesting their significant relevance in the discussion around Ram Mandir.

The prevalence of searches such as "Ram Mandir Ka", "Ram Mandir Video", and "News Ram Mandir" in both lists suggests a significant level of public interest in acquiring knowledge about the progress of the Ram Mandir, encompassing its construction and media coverage. The inclusion of specific inquiries such as "Ayodhya Ka Mandir", "Shri Ram", and "Ram Mandir Ayodhya Ka" signifies a profound cultural and religious affinity with the subject matter in India.

Notably, the term "Shri Ram Mandir" is prominently featured on both lists, further emphasising the temple's association with the Hindu deity Shri Ram. Queries for "Ram Mandir Song",

Table 2 — Trending queries within India and Worldwide

S.N.	Top in Worldwide	Top List	Top in India	Top list
1.	ayodhya mandir	100	ram mandir ayodhya	100
2.	ayodhya ram mandir	93	ayodhya	99
3.	ayodhya	92	ayodhya mandir	99
4.	ram mandir ka	48	ram mandir ka	53
5.	ram mandir video	20	ram mandir video	22
6.	news ram mandir	18	news ram mandir	20
7.	shri ram	14	ram mandir ayodhya ka	15
8.	shri ram mandir	14	shri ram	14
9.	ayodhya ka ram mandir	14	ayodhya ka mandir	14
10.	ram mandir song	13	ram mandir photo	14
11.	ram mandir date	12	shri ram mandir	14
12.	ram mandir photo	12	ram mandir song	13
13.	ram mandir in ayodhya	11	ram mandir in ayodhya	11
14.	india	10	ram mandir date	11
15.	ram mandir temple	10	ram mandir ka video	9
16.	ram mandir ka video	8	ram mandir temple	9
17.	ram mandir opening	8	babri masjid ram mandir	8
18.	ram mandir babri masjid	8	babri masjid	8
19.	ayodhya mein ram mandir	8	ram mandir opening	8
20.	new ram mandir	7	ayodhya mein ram mandir	8
21.	babri masjid	7	ram mandir nirman	7
22.	ram mandir nirman	7	new ram mandir	7
23.	ram mandir donation	7	ram mandir station	7
24.	ram mandir station	6	ram mandir donation	7
25.	ram mandir case	6	ayodhya ke ram mandir	7

"Ram Mandir Photo", and "Ram Mandir Date" yield diverse results encompassing religious, historical, and cultural dimensions. Unlike the global queries, the Indian list contains more specific search terms such as "Babri Masjid Ram Mandir", "Ram Mandir Nirman", and "Ram Mandir Station", highlighting the intricate and multifaceted nature of the Ram Mandir issue within India. These questions refer to the area's historical and legal conflicts and show interest in constructing the temple and its connected infrastructure.

Discussion and Conclusion

An exhaustive examination of Google Trends data has been methodically carried out to decipher the

complex cultural impact of Ram Mandir, a subject profoundly ingrained in the socio-cultural tapestry of India. An analysis of temporal trends reveals a consistent albeit intermittent fluctuation in the level of interest in "Ram Mandir" in India. This pattern suggests that the topic continues to be relevant, with occasional surges in public curiosity. This pattern, characterised by a low standard deviation, indicates the presence of certain events or developments that temporarily boost online engagement. Google Trends data revealed significant variations in forecasting model performance. Support Vector Regression (SVR) excelled within India, while Neural Networks outperformed globally. SVR projected a gradual decline in Indian interest, while Neural Networks forecasted a sustained global interest. These findings underscore the importance of selecting appropriate forecasting models tailored to regional dynamics and global trends.

Conversely, the global interest landscape is marked by a steady level of engagement, suggesting a lasting but moderate level of worldwide interest in the issue. Research on India's geography shows a diverse digital engagement environment, emphasising the strong impact of local cultural and socio-political factors on online search activity. Notably, the regions with the highest search interest include Jharkhand, Uttar Pradesh, and Madhya Pradesh, suggesting a potential connection to the Ram Mandir narrative rooted in their cultural or historical background.

Furthermore, the study examines the related search phrases and topics within India and beyond, contributing to a varied and comprehensive understanding of the interests surrounding Ram Mandir. The prevalent queries for "Hindu Temple", "Rama", and "Ayodhya" underscore the religious and historical importance of the subject. Simultaneously, the emergence of questions regarding public officials, legal proceedings, and infrastructure developments indicates a more complex and interconnected web of social and political dynamics around the Ram Mandir concept.

In addition, the present study fills important research gaps by utilising Google Trends to investigate cultural phenomena and religious landmarks, addressing a noticeable dearth of such studies in existing literature. By employing this innovative approach, the present study will provide valuable insights into the digital representation of cultural discourse and its implications for broader societal trends. The present study has provided the

opportunity for further research. It could explore comparative analyses across different cultural contexts, longitudinal studies tracking changes in online interest, and qualitative investigations to uncover meanings associated with religious landmarks online. Cross-disciplinary approaches and investigations into policy implications would deepen understanding of the interplay between digital media, culture, and society.

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Further Reading

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