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# Sentiment Analysis through Search Engine Trends for Green Marketing and Affiliate Terms: A Region Based Geographical Analysis

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***Abstract – The key purpose of this exploratory research is to determine the interest of the Google users towards the green products/marketing and causes and affiliate concepts of green products in India in the period from May 2017 to May 2018. Google trends are progressively used in various opinion finding functions to understand public attitude. We run Google trends for certain keywords which represent our variables that are relevant to Green Marketing. As the next step, we compare the interest towards various affiliated keywords for the pre-determined time frame. Afterwards a geographical regional analysis related to identify keywords is performed for various Indian states so as to identify the most interest geographical regions in our selected variables. The findings of the study have allowed us to recognize important 'green' keywords that most concern people based on seasons and regions in India.***

***Keywords: Green Marketing; Sentiment Analysis; Textual Analysis***

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## 1. INTRODUCTION

New technologies allow users to not only share their views on new media but also allow them to search for terms and terminology of their interest over the new media platforms and search engines. Thanks to emerging technology, the basic considerations of the individual community's particular interest which are in service to both consumers and the organizations that establish the action strategy vis-à - vis these issues can now be accessed, investigated, or collected.

One such subject is related to 'green marketing' and 'green products', the impact of 'green products' and their impact on humans both concerning health or economics. The global situation is steadily worsening after pioneers of sustainable development started researching the environmental effects of human activity many decades ago. It has now reached the point that the use of natural resources is 40% more than the amount the Planet should withstand. The growth of such events is connected with climate and the atmosphere in general so that investigations like this can lead to the reduction of such events by providing knowledge and methodological methodologies for future experiments or studies in that area. Furthermore, today it is important that resources be not only controlled but also assured for future generations that these resources are available and to mitigate the environmental and public health effects of human activities.

The key purpose of this exploratory research is to determine the interest of the Google users towards the green products/marketing and causes and affiliate concepts of green products in India in the period from May 2017 to May 2018.

**Google Trends as a Platform to Measure Public Interest**

Search Engines has become an essential in recent years in which people are able to search topics about their interest such as atmosphere and wellbeing and other public-interest issues. In reality, internet and search platforms are a very high global usage platform in the production of day-to-day operations and a valuable source for information on Internet users' interactions and views. Millions of tweets, searches and text messages are released every minute. Among search engines, Google is the one which is highly used to search terms ad topics f interest. This provides a platform, which encourages free flow of information between seekers and purveyor of information and to exchange opinion as quickly as possible.

Multiple studies have tried to understand the digital media platforms for communication stressing that social network is an atmosphere where users with the same interests will interact and shape groups, and also to exchange and look

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for knowledge. Google has subsequently been more and more used for research, particularly for public opinion studies. Google may also help businesses to recognize important causes for the atmosphere and public health that can help improve their management and offer customer insights. Google is an internet search and media network of immense relevance.

## 2. REVIEW OF LITERATURE

The study of Sentiments (Sentiment analysis) is the discipline that analyses the thoughts, feelings, judgments and perceptions of individuals and emotions of organizations, such as products, resources and institutions, groups, problems, activities and topics and qualities of the persons. Sentiment analysis is also called opinion mining. This is a big area for trouble. There are also several common terms and functions, e.g. thought analysis, viewpoint processing, viewpoint retrieval, sentiment mining, analysis of subjectivity, effect analysis, emotion analysis, mining review, and so on. Both of them now, however, are in the sense of the study of emotions or viewpoint mining. Although the term sentiment analysis is used in industry, both sentiment analysis and opinion mining are commonly used in academia. They represent the same area of analysis in theory. The word feeling research emerged maybe first **(Nasukawa and Yi, 2003)** and it emerged in the word perception mining **(Dave, Lawrence and Pennock, 2003)**.

Sentiment and opinion analysis, however, occurred earlier **(Das and Chen, 2001; Morinaga et. al., 2002; Pang, Lee and Vaithyanathan, 2002; Tong, 2001; Turney, 2002; Wiebe, 2000**). The terms sentiment analysis and opinion mining is used interchangeably in this study. To simplify the introduction, the word opinion in this book was used to describe viewpoint, sentiment, assessment, appraisal, mood, and emotion. Both sentiment analysis and opinion mining conveys the same meaning however they are not identical and used separately. The importance of opinion is also rather broad in itself. Analysis of sentiment and opinion mining focuses primarily on opinions expressing or implying positive or negative feelings.

## 3. RESEARCH METHODOLOGY

1. Sample

The sample consists of the Google Trends interest for five terms namely 1) Green Marketing, 2) Energy Ratings, 3) Green Electronic Goods, 4) Green Products and 5) Energy Efficiency, over the geographical area of India for the period from May 2017 to May 2018 (data points frequency is weekly).

2. Data Collection and Extraction

Data is extracted through google trends website by inputting the five terms namely 1) Green Marketing, 2) Energy Ratings, 3) Green Electronic Goods, 4) Green Products and 5) Energy Efficiency and then subsequently adjusting to retrieve data for the previous one year.

3. Tools

After extracting data through google trends website by inputting the five terms namely 1) Green Marketing, 2) Energy Ratings, 3) Green Electronic Goods, 4) Green Products and 5) Energy Efficiency and then subsequently adjusting to retrieve data for the previous one year, the graphical analysis is performed to compare the performance of interest received by the above five terms. Also, the regional performance of interest received for these five terms over the Indian geography is also compared graphically. The interest received for the five terms are compared through Karl Pearson's Correlation Coefficient to analyze the proclivity in the interest received amongst the terms.

## 4. ANALYSIS AND DISCUSSION

**Trend in the Interest for Green Marketing and Affiliate Terms for May 2017 to May 2018**

**Interest over time**

The interest over time number reflects the search interest for the given region and time relative to the highest point on the graph. The peak popularity for the word is a value of 100. A meaning of 50 indicates that the expression is half as popular. For this word, a score of 0 means there was not enough evidence.


*Source: Google Trends: Weekly Trends from Sep 2017 to 2018*

**Figure 1: Interest for Green Marketing and Affiliate Terms for May 2017 to May 2018**

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***Matrix 1: Correlation Matrix Between the Affiliate Terms***

| | Green marketing: (India) | Green Products: (India) | Energy Ratings: (India) | Energy efficiency: (India) |
|---|---|---|---|---|
| Green marketing: (India) | 1 | - | - | - |
| Green Products: (India) | -0.252301594 | 1 | - | - |
| Energy Ratings: (India) | -0.035579183 | 0.21497288 | 1 | - |
| Energy efficiency: (India) | -0.122390443 | 0.560997694 | 0.296673459 | 1 |

The figure above (Figure 01) displays the interest on Google, for five terms namely 1) Green Marketing, 2) Energy Ratings, 3) Green Electronic Goods, 4) Green Products and 5) Energy Efficiency, over the geographical area of India for the period from May 2017 to May 2018 (data points frequency is weekly). The liveliest term has been found to be “Energy Efficiency” over the 12-month period followed by “Green Products”, then “Green Marketing” and “Energy Ratings”. The term “Green Electronic Goods” could not gather the trends score due to low searches.

The summer months in India, i.e. April to June have seen an elevated trend for “Energy Efficiency”, a sub-due in the early monsoon month of July and again an increase in the late monsoon months of August and May. The interest score for the term “Energy Efficiency” has consistently been higher than the other four terms discussed in previous paragraph.

There is proclivity in the movement of interest for the terms “Energy Efficiency” and “Green Products” for the period under study, although the interest for the term “Green Products” has been lower than the term “Energy Efficiency”. The same can be inferred from Matrix 01, the Correlation Coefficient between “Energy Efficiency” and “Green Products” is 0.56.

The term “Green Marketing” shows interest ratings below 40 from May 2017 to February 2018, and has thereafter since March 2018 to May 2018 has been consistently below 20. The term “Green Marketing” also shows weakly negative interest trend correlation with “Green Products” and “Energy Efficiency”.

The term “Energy Ratings” has consistently gathered subdued interest over the period of time, recording scores below 10. The term “Green Electronic Goods” could not gather enough interest to be reported by Google Trends.

**Interest by sub-region**

Interest by sub-region reflects that how much your keyword during the time period stated was most common. The values are based on a scale 0 to 100, where 100 is the most popular spot in this spot for a fraction of all searches, a value of 50 indicates a half-popular spot. A 0 value means a position where the data for this word were not appropriate. A higher value indicates a greater share of all requests and not an actual higher query number. A small nation with 80% of the questions for "bananas" is double the ranking of a giant world, where just 40% for a particular term say “x” are requested.


**Figure 2**

Figure 2 shows Interest by sub-region for the term ‘Green Marketing’. The graph shows that the term has been most popular in Karnataka scoring 100 points, followed by Chandigarh at 98, Kerala at 92 and Tamil Nadu at 79. Bihar at 16, Rajasthan at 23 and Madhya Pradesh at 24 score the last. The states and union-territories not mentioned did not fetch any scores.


**Figure 3**

Figure 3 shows Interest by sub-region for the term ‘Green Products’. The graph shows that the term has been most popular in Kerala scoring 100 points, followed by Karnataka at 91, Tamil Nadu at 87 and Maharashtra at 82. Bihar at 18 and Madhya Pradesh at 26 score the last. The states and union-territories not mentioned did not fetch any scores.

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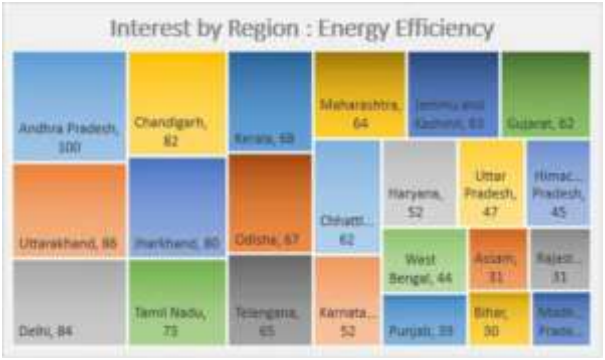


**Figure 4**

Figure 4 shows Interest by sub-region for the term 'Energy Efficiency'. The graph shows that the term has been most popular in Andhra Pradesh scoring 100 points, followed by Uttarakhand at 86, Delhi at 84 and Chandigarh at 82. Bihar at 30 and Madhya Pradesh at 30 score the last. The states and union-territories not mentioned did not fetch any scores.

## 5. FINDINGS

1. The term "Energy Efficiency" is the most popular and most sought after term amongst the five terms namely - 1) Green Marketing, 2) Energy Ratings, 3) Green Electronic Goods, 4) Green Products and 5) Energy Efficiency.

2. The popularity of the term "Energy Efficiency" reached maximum between the month of July and August 2018.

3. The popularity of the term "Energy Efficiency" rises during the summer months and after the end of winter month in India.

4. The term "Green Products" is second most popular terms amongst the five terms namely - 1) Green Marketing, 2) Energy Ratings, 3) Green Electronic Goods, 4) Green Products and 5) Energy Efficiency.

5. There is proclivity in the movement of popularity in the terms "Energy Efficiency" and "Green Products", however the interest for the term "Green Products" is below 40 points in the first half of the period under study and is below 60 points in the latter half of the period under study.

6. The term "Green Marketing" has drawn sub-due interest in the entire period under study and ranks below 40 points.

7. Karnataka, Chandigarh and Kerala are the top three states which have generated most interest in the term "Green Marketing".

8. Kerala, Karnataka, Tamil Nadu and Maharashtra are the top four states which have generated most interest in the term "Green Products".

9. Andhra Pradesh, Uttrakhand, Delhi and Chandigarh are the top four states which have generated most interest in the term "Energy Efficiency".

## 6. CONCLUSIONS

The emergence of new-technology has been a representation of the new technical environments and, in particular, of internet and social media. Internet, search engines and social media in particular have become a new means of communicating their viewpoint or views on a particular issue by individuals, social movements, political parties, businesses, non-profit organisations or communities. In this study, we were able to recognise the "Green" terms/ affiliate issues that affect India and may impact the economic growth of the earth, public health and the environment is concerned by the search interest review with the terms 1) Green Marketing, 2) Energy Ratings, 3) Green Electronic Goods, 4) Green Products and 5) Energy Efficiency. The significance of the public opinion research of Google Trends regarding these terms is deciding the value of our findings. The study of opinion in the google trends may lead to recognising social , economic , environmental and cultural concerns in India, pertaining to seasons and month in India along with the particular geographies/sub-regions as shown by our findings. The study can have managerial implications for electronic goods manufacturing companies so as to streamline their sales mix and marketing mix in particular season and months in India and also in select states in Indian geographical market.

## 7. REFERENCES

1. Morinaga, S., Yamanishi, K., Tateishi, K., & Fukushima, T. (2002, July). Mining product reputations on the web. In Proceedings of the eighth ACM SIGKDD international conference on Knowledge discovery and data mining (pp. 341-349).

2. Pang, B., Lee, L., &Vaithyanathan, S. (2002). Thumbs up? Sentiment classification using machine learning techniques. arXiv preprint cs/0205070.

3. Tong, S., &Koller, D. (2001). Support vector machine active learning with applications to text classification. Journal

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of machine learning research, 2(Nov), 45-66.

4. Turney, P. D. (2002). Thumbs up or thumbs down? Semantic orientation applied to unsupervised classification of reviews. arXiv preprint cs/0212032.

5. Wiebe, J. (2002). Instructions for annotating opinions in newspaper articles. Technical Report.

6. Das, S., & Chen, M. (2001, July). Yahoo! for Amazon: Extracting market sentiment from stock message boards. In Proceedings of the Asia Pacific finance association annual conference (APFA) (Vol. 35, p. 43).

7. Dave, K., Lawrence, S., &Pennock, D. M. (2003, May). Mining the peanut gallery: Opinion extraction and semantic classification of product reviews. In Proceedings of the 12th international conference on World Wide Web (pp. 519-528).

8. Nasukawa, T., & Yi, J. (2003, October). Sentiment analysis: Capturing favorability using natural language processing. In Proceedings of the 2nd international conference on Knowledge capture (pp. 70-77).

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