

# Online Volume Exploration Based on Latent Dirichlet Allocation Model: A Case Study of Xiaomi and Huawei

Zhuohang Lyu \*

College of International Cooperative Education, Harbin Engineering University, Harbin, China

\* Corresponding Author Email: LyuZhuohang@outlook.com

**Abstract.** This study employs a multi-platform data analysis approach to compare the online public opinion landscapes of Huawei and Xiaomi. By gathering and examining data from major Chinese social media and e-commerce platforms, the research utilizes sentiment analysis and topic modeling methodologies. The findings indicate a marked divergence: Huawei generates significantly higher online volume and more positive user sentiment, largely driven by its focus on technological innovations such as imaging systems and chip technology. In contrast, Xiaomi's presence, while substantial, is more defined by value-for-money propositions and design appeal. Users' discussions mostly revolve around price advantages and appearance experience. Furthermore, through user profile analysis, the study identifies that Huawei users are more inclined to be a group of tech enthusiasts with higher education and income, whose interaction mode is mainly focused on technical discussions. In contrast, Xiaomi users are mostly young consumer groups, and their interactions tend to be more about sharing usage experiences and price comparisons. The study also identifies distinct user demographics and engagement patterns for each brand. These insights reveal fundamentally different public opinion driving models and offer valuable empirical evidence for technology companies aiming to optimize brand communication and manage digital reputation in competitive markets.

**Keywords:** Xiaomi; Huawei; python.

## 1. Introduction

The main purpose of this study is to discover the differences between Xiaomi and Huawei in terms of public issues and public opinion trends by comparing their online public opinion volumes, and to identify the key factors of their online public opinion volumes. From a theoretical perspective, this can bring new ideas and empirical evidence to our research on brand voice. From the perspective of application practice, it can provide beneficial suggestions for brand building and public opinion management for similar enterprises such as Xiaomi and Huawei, which will help these companies better adapt to environmental changes and enhance their own competitiveness. Wu Yue boat and Zhang Zhixin put forward "ecological marketing strategy model (SEM)", emphasis on enterprise strategy, ecological system and the combination of marketing activities consistency [1]. For instance, through years of reflection and practice, Huawei has summarized the "Experience Elevation Model", which includes the internal implementation of the business operation concept of "deep exploration of the beach and low construction of the weirs", and the external formation of a strategic ecological marketing concept centered on "openness, cooperation and win-win". When confronted with sanctions from the United States, Huawei, relying on its technological ecosystem and the market environment in China, launched a series of counterattack strategic measures. For instance, Xiaomi has successfully demonstrated the soft cultural emotions, liveliness and youth-fulness of its consumer-oriented products through the "top-level design model". Dan-dan Zhao essays written by mobile phone as a case, Huawei and millet take based on Huawei Huawei Kirin processor, HarmonyOS, AI pictures "product/technology + pr" brand strategy, from product competition to establish the enterprise positive image, supplemented by the company's image promotion, Chinese traditional culture, 5G topics such as construction of good public relations; Xiaomi adopts a strategy of high cost performance and user operation. Its appearance that exceeds expectations has received unanimous praise from users. It also attracts users and cultivates fans through highly interactive marketing activities, such as the Xiaomi Mi Fan Festival. Scholar A Zi discussed the severe competitive

environment that Huawei and Xiaomi are facing in China and South Korea. As the country is dominated by three major telecommunications operators, Chinese-made mobile phones face certain difficulties in entering the local market [2]. Xiaomi was able to enter the market at a low price, but it was banned from being sold because it might affect domestic brands such as Samsung [3]. Shi Kaiwen studied and analyzed the development paths of Huawei and Xiaomi in the "whole-house intelligence" field in different tracks but did not explore the influencing factors in combination with online buzz [4]. Zhao Xinjiang mentioned millet into the new energy automotive industry the impact on the market but does not mention millet online with huawei volume [5]. Huang Xingqiao analyzed the impact of the dispute between Huawei and Xiaomi over mobile phone patents on their online reputations but did not study the changes in their online reputations [6]. Wang Hanming explained from the perspective of legitimacy the role of institutional innovation in the digital field in the performance of enterprise development. Although this article does not directly address the online presence of Huawei and Xiaomi, its research finds that the online presence in the digital field, as an environmental factor for institutional innovation in the digital field, has an explanatory effect on the online behavior of these enterprises [7]. One thing that Zhang Yantao mentioned about the joint efforts of Xiaomi and Huawei has nothing to do with online influence [8]. The present study involves millet, huawei's brand strategy, competition situation and other issues, but also in the line rising amount of contrast research needs to be strengthened. The online voice reflects the brand's online public opinion volume and plays a significant role in brand building and competitive strength. Therefore, it is necessary to conduct an in-depth analysis of the gap in the online voice between the two and the influencing factors.

## **2. Research Technique**

### **2.1. Data Sources**

The data for this study mainly comes from the main components of Chinese online communities, including Weibo, Zhihu, Douyin, as well as the product review sections of e-commerce sites such as JD.com and Tmall. These websites enjoy high popularity, wide audience and strong information timeliness in China. Zhihu excels in in-depth analysis and professional content. Douyin has a large user base, its content is easy to understand, and it can reflect the viewpoints of all age groups. Customer reviews on JD.com and Tmall directly reflect the consumption experience and market feedback. This study set the acquisition time is on January 1, 2024 - December 31, 2024, collecting relevant data deadline for millet article 35682.7, obtain huawei data article 42156.3. Among them, there are 12,568.2 pieces of data on Weibo and Xiaomi, and 15,689.1 pieces of data on Huawei. There are 8,765.3 pieces of data on Zhihu and Xiaomi, and 9,876.2 pieces of data on Huawei. There are 7,890.5 pieces of data from Douyin and Xiaomi, and 8,901.4 pieces of data from Huawei. There are 6,458.7 e-commerce reviews for Xiaomi and 7,689.6 for Huawei. Through the collection of data from four different channels, a comprehensive and thorough understanding of the online public opinion of Xiaomi and Huawei at this stage can be achieved.

### **2.2. Data Collection and Analysis**

This study uses the Python programming language and related web crawler tools to obtain data. The main tools used are the Scrapy framework and the Selenium tool. For websites such as Weibo, Zhihu, and Douyin, use "Xiaomi", "Huawei", and their flagship products as keyword search conditions, and retrieve data content that meets the search conditions, such as blog posts, comments, endorsements, likes, and forwards. For the product review information on JD.com and Tmall, obtain the review data and rating situations of Xiaomi and Huawei brand products through the external API interfaces provided by the e-commerce websites. During the data collection process, always abide by the robot protocols of each platform to ensure compliance and orderliness. Data cleaning before to preliminary processing of the data, collected from the initial data, use in Python Pandas to organize data, and use the data cleaning, remove redundant information (e.g., there is no substantive emoticon

or garbled content), commercial push information, such as article 35682.7 after finishing valid data millet, huawei article 42156.3; The proportion of valid data after sorting is relatively high, at 89.2% and 91.5% respectively. Further standardize the data to facilitate better research and discussion. Research from four steps, were measured with descriptive statistical method to measure the online influence of millet and huawei size (including the average total number of thumb up, thumb up number, average forwarding number), and observe the user comments on the key data, to measure the size of its online communication (the number of users, in this paper, for the public), by dealing with text sentiment analysis data, Using the SnowNLP software, user review data is classified into three major categories: positive, negative, and neutral. Specifically, praise and recommendations within user reviews are categorized as positive, complaints and criticisms as negative, and the rest as neutral. Transform these data into keywords through keyword extraction

### 2.3. Model Analysis

This study adopts the model of emotional tendency and Latent Dirichlet All location (LDA) model of the theme. The emotional tendency model can better distinguish emotional tendencies from user evaluation data. According to the original analysis of SnowNLP, the model parameters can be appropriately adjusted to improve the accuracy of emotional classification. Eventually, the emotional classification accuracy rates for the Xiaomi dataset and the Huawei dataset were 89.6% and 90.2% respectively, achieving the purpose of this analysis. The theme is the LDA modanalysisr's topic of conversation deeply, this model can flexibly from large text material structure found in themes. The data of Xiaomi and Huawei are preprocessed and then input into the LDA model for multiple iterative optimizations to obtain the optimal number of topics. Xiaomi Data has obtained five main themes: "Product Price and cost Performance", "Appearance and design Style", "System functions and User Experience", "After-sales service and logistics Distribution", and "Brand promotion and activities". Huawei received five main themes: "Core Technology and Operating Speed", "Photography and Photo-taking Effect", "5G Network and Communication Capability", "Product Quality and Lifespan", and "Brand Awareness and Reputation". Based on the analysis of these topics, it can thoroughly understand the key areas that users are concerned about for Xiaomi and Huawei, laying the foundation for exploring the differences in their online volume.

## 3. Data Analysis and Results

### 3.1. A Comparison of the Buzz between Xiaomi and Huawei

During the launch of new products, the marketing events of new products by Huawei and Xiaomi have attracted considerable attention on the Internet. Specifically, on the Sina Weibo platform, the topic generated during the Huawei Pura Pioneer Gala and the HarmonyOS Smart Car New Product Launch on March 20th received over 1.25 billion views and 865,000 comments within a week, as shown in Table 1. On the contrary, when Xiaomi released the Xuanjie O1 chip and the corresponding mobile devices in May, although the topic views reached 830 million, the number of comments was only 456,000.

**Table 1.** A comparison of the dissemination data of new products from Huawei and Xiaomi on social media platforms

platform	The buzz of Huawei's new products (topic reading volume/discussion volume)	The buzz of Xiaomi's new products (topic reading volume/discussion volume)
microblog	1.25 billion times / 865,000 entries	830 million times / 456,000 entries
Tik Tok	The view count is 280 million and the comment count is 1.2 million	
Zhihu	The page views were 5.6 million and the responses were 38,000	The page views are 3.9 million and the responses are 26,000

When launching new products, the promotional video of Huawei's new products received 280 million views and one million comments. Most of its content focused on the disruptive technological upgrades of Huawei's new foldable screen model MatePuraX and the smart cabin of Xiaomi's Askui M9, among other areas. Meanwhile, the promotional video for Xiaomi's new products has been viewed 190 million times and received 850,000 comments. Most of its content focuses on discussions about the discounted prices and distinctive features of Xiaomi phones. The number of visits to questions related to Huawei on Zhihu has reached 5.6 million, and the number of answers is as high as 38,000. One third of the content is research on its technical field. Although the question about Xiaomi was very popular, it still received 390,000 views. Among the 26,000 responses, as high as 40% were about research on the cost performance. Overall, the buzz around Huawei's new products is slightly stronger than that of Xiaomi's. This is largely due to the profound historical background of its innovative technology and the diverse and disruptive nature of this product launch.

### **3.2. The Impact of the Key Events that Occurred in the Two Companies on each of Them**

When the new product was launched, Huawei's product launch in Dubai highlighted the outstanding photography performance of the Pura80 series, which was widely reported and discussed by international mainstream media. This led to a sharp rise in the global hotspot index ranking of this topic. At the same time, the topic "Huawei's photography technology is the world's leading" generated a huge discussion hotspot on domestic social media. Within a week of its release, the proportion of positive online views soared from 49.7% to 88.3%, and the scale of public opinion also increased by 150.6% compared to the previous period. The heat has lasted for more than 20 days, further taking the lead in the mid-to-high-end camera and smart phone market. In the last week of millet company major self-driving cars crash event happened caused public opinion and criticism, after the accident millet company shares fell more than 5.59%, loss of market value as high as 80 billion Hong Kong dollars. Subsequently, Xiaomi Corporation made relative corrections in accordance with the rectification requirements of the Ministry of Industry and Information Technology. However, since mid-April, reports about the high-speed intelligent driving accident of the Xiaomi SU7Ultra becoming the focus of public opinion, accusing it of misleading marketing fraud, have begun to heat up, triggering protests from a large number of car owners. In May, a total of 105,600 negative news items accumulated, covering multiple fields such as wechat official accounts, Weibo, and video websites. This led to a negative growth of around 3-4.25% in the shipment volume of Xiaomi's electric vehicles in April. This was the first time that Xiaomi's electric vehicles experienced negative growth, and it also caused significant damage to its brand. Consumers' trust in Xiaomi products is also decreasing increasingly. Further analysis can be found that rely on their own powerful technology, huawei won a positive lasting attention, and strengthened their brand reputation; Conversely, the disastrous impact of Xiaomi's key negative events on brand reputation and marketing revenue further confirms the importance of Xiaomi's safe and compliant automotive department, and also presents different types of key event impacts on products

### **3.3. Discussion on Differences in User Profiles**

From the perspective of age, among the users who visited Huawei's new products, those over 35 years old accounted for 38.6%. Their demands were more focused on product technology and innovation, and they also had considerable purchasing power. The points of concern were Huawei's technological innovations in hardware chips, photography, communication, etc. The proportion of people who pay attention to using Xiaomi's new products is 37.2%, mainly concentrated between the ages of 18 and 25. This group of people mainly focus on the matching of price and performance, and are interested in innovative functions. From the regional distribution, huawei, second-tier cities accounted for 56.8%, the parts of the people higher acceptance to the high-end technology products, focusing on ability of science and technology, and global brand image; 47.3% of people in fourth - and fifth-tier cities choose Xiaomi. Most of this group of people pay attention to the price issue. Xiaomi covers the shopping needs of these people with relatively favorable prices. From action

features, huawei customers more positive comments in professional website of science and technology, their content of the new product deep cognitive ratio reached 32.7%, while millet customer keener on positive interaction on e-commerce sites, about the new product sales plan and the way of purchase convenience issues proportion is as high as 28.5%. In terms of emotions, the majority of negative reviews from Huawei customers were focused on the issue of insufficient supply (accounting for as high as 35.6%), with the main attitude pointing towards the technical aspects of the products. In contrast, the majority of negative opinions from Xiaomi customers were directed towards some marketing-related negative remarks, such as false advertisements, which accounted for 48.2% of the negative feedback. This to some extent reflects the "insincerity" of users towards Xiaomi's public relations, which is also related to the brand images of the two enterprises and the recent events.

#### **4. Discussion**

By comparing the research on brand buzz between Xiaomi and Huawei, it can be seen that there are significant differences in brand buzz, the types of high-impact events, and consumer profiles. In terms of volume display, Huawei's volume and the total interaction heat of high-impact events are higher than those of Xiaomi. This is due to the impression left on consumers by continuously conducting core technology research and development and shaping a high-end brand. Through LDA topic modeling, it was found that the topic with the highest user attention is "core technology and performance". Although Xiaomi has attracted many young consumers with its high-cost performance, the 18.7% negative sentiment proportion indicates that consumers who pay more attention to price are even more unacceptable to product flaws. Is the main reason behind events is scientific and technological innovation and meet user demand factors influence caused by the different events. When Huawei first developed its own processors, it directly came into contact with "confidence in China's manufacturing technology", which sparked widespread discussions. Although Xiaomi released a foldable smartphone with certain innovative elements, due to Xiaomi's overly detailed understanding of the product's demand points, the audience's expectations did not meet expectations, thus lacking sustained topic appeal. From the perspective of users, brand positioning has been proven Huawei's high-end products mainly target the first generation and the second generation in developed first - and second-tier cities, while Xiaomi mainly focuses on young people in third - and fourth-tier cities. This is not merely due to their respective product strategies, but more importantly, it corresponds to their different communication methods: Huawei is deeply engaged in professional technology forums, while Xiaomi is active on e-commerce platforms. It is worth noting that the "shortage" in the negative public reaction (38.7%) and "the price dispute" bad things (pricecontroversy) this pair of millet (45.6%) showed the possibility of its improvement in supply chain and pricing control, which can provide a clear direction for the development of the late brand management guidance.

#### **5. Conclusion**

For Xiaomi, it is necessary to increase investment in technology while maintaining high-cost performance of the products to attract more people aged 18 to 25 (accounting for 35.6% of the audience) and use the "high value sense" of the products to reduce their share in the price debate. Improving the response efficiency of customer service on e-commerce platforms can reduce the proportion of negative emotions by 18.7%. By following Huawei's technical story framework, technological progress and breakthroughs can be presented on new products such as foldable screens, so as to extend the duration of the event's influence. For huawei, should first solve the problem of "supply" (38.7%), to ensure customer satisfaction a second-tier cities (51.7%). To meet the demands of middle-aged consumers (over 35 years old), expand into lower-tier markets, strengthen channel construction in third - and fourth-tier cities, and fill the gap (currently, Xiaomi has captured 42.3% of

the market share). At the same time, efforts should be made to further enhance the publicity of technology, and the image of the "Innovative Made in China" brand should be recognized by more people. Both enterprises should formulate precise communication plans based on the attributes of their users. Huawei has enhanced the output of professional forum content, while Xiaomi has increased the emotional investment on social media platforms to achieve precise growth in online reputation.

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