

A Comparative Study of Korean and Chinese Consumer Perceptions of Hanbang Cosmetics: A Topic Modeling Analysis of Sulwhasoo Reviews

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Abstract

This study analyzes Korean and Chinese consumer perceptions of Hanbang (traditional Korean herbal) cosmetics, specifically focusing on Sulwhasoo's Jaum two-piece set. Using topic modeling, 7,000 consumer reviews from Naver (Korea) and Baidu (China) were examined to uncover the key themes that influence consumer satisfaction and dissatisfaction. The results reveal significant similarities and differences between the two markets. In both countries, the product is frequently purchased as a gift, and price sensitivity is a major concern. However, Korean consumers prioritize delivery experiences and product functionality, while Chinese consumers focus more on product quality and effectiveness. These findings highlight the need for targeted strategies in each market. For success in Korea, competitive pricing and improved logistics are crucial, whereas in China, maintaining high product quality and capitalizing on the gifting culture are essential. Additionally, global expansion requires educating consumers on the benefits of Hanbang cosmetics, ensuring product consistency, and adapting to regional preferences. This research provides valuable insights for cosmetic companies aiming to enhance their market presence both locally and internationally.

Keywords : Hanbang Cosmetics, Consumer Perceptions, Topic Modeling, Korean Market, Chinese Market

Received : 2024. 08. 02. Revised : 2024. 08. 16. Final Acceptance : 2024. 08. 20.

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1. Introduction

In recent years, Korean cosmetic companies have seen remarkable success in the global market, driven by the rise of the Korean Wave (Hallyu) and an increasing demand for premium skincare products. The Korean cosmetic industry has experienced rapid growth, with exports surging due to a global fascination with Korean beauty standards and practices. Among these, Hanbang cosmetics, products incorporating traditional Korean herbal medicine, have become particularly popular, blending ancient ingredients with modern scientific techniques. Brands like Sulwhasoo have emerged as market leaders, offering luxury skincare solutions that resonate with consumers around the world [Kim and Oh, 2022].

The expansion of the cosmetic market is particularly noticeable in South Korea and China, two of the largest and fastest-growing markets in Asia. Both countries have experienced significant population growth, which has contributed to a growing demand for beauty and skincare products. South Korea's cosmetics industry alone grew by 16.1% in 2020, with China now being the largest export market for Korean cosmetics, accounting for over 50% of total exports [Kim and Hong, 2017]. This growth is accompanied by increasing consumer sophistication, with individuals in both countries seeking high-quality, premium skincare products [Hopkins, 2007].

China, in particular, has undergone rapid economic development in the 21st century, resulting in a burgeoning middle and upper class with heightened purchasing power. These consumers are increasingly drawn to luxury cosmetics, such as Hanbang products, which they perceive as offering both traditional val-

ue and modern efficacy [Hopkins, 2007]. Chinese consumers view Sulwhasoo not only as a premium brand but also as a cultural symbol of wellness and beauty, leveraging traditional knowledge to meet contemporary skincare needs. This rise in consumer demand has led to a significant increase in reviews and feedback on products, providing a rich dataset for analysis.

Moreover, the geographic and historical proximity between Korea and China has facilitated close cultural and economic exchanges between the two countries, particularly in the cosmetics industry [Kim and Oh, 2022]. Korean beauty standards, often influenced by K-pop and Korean dramas, have significantly shaped Chinese consumer preferences [Kang et al., 2020]. In return, Chinese consumers, with their growing interest in high-end and holistic skincare solutions, have become pivotal to the success of Korean brands like Sulwhasoo. The shared cultural appreciation for herbal medicine, rooted in both Korean and Chinese traditions, further enhances the appeal of Hanbang cosmetics in both markets.

The purpose of this study is to analyze consumer reviews of Hanbang (traditional Korean herbal) cosmetics from both Korean and Chinese consumers, with the aim of comparing perceptions between the two groups. By identifying the similarities and differences in how Korean and Chinese consumers perceive Hanbang cosmetics, this research seeks to provide a clearer understanding of the key factors influencing consumer attitudes in each market. Ultimately, the study aims to offer guidelines for companies producing Hanbang cosmetics, helping them identify areas where improvement is needed to better attract and engage consumers not only in Korea and China but also in the global market. This will involve

the identification and management of critical factors that are essential for global success in the cosmetics industry.

2. Related Research

2.1 Text Mining-based Review Analysis

Text mining has emerged as a crucial tool for analyzing large volumes of consumer reviews, especially in the context of understanding consumer sentiments and preferences. By transforming unstructured textual data into structured insights, text mining enables researchers and businesses to uncover hidden patterns, trends, and relationships within customer feedback. The following are some of the main text mining techniques used for review analysis.

Sentiment analysis is one of the most widely used text mining techniques in review analysis. This method identifies the polarity (positive, negative, or neutral) of the text to determine consumers' emotions and attitudes towards a product or service. For instance, in previous research on online product reviews, sentiment analysis has been used to gauge consumer satisfaction and dissatisfaction with cosmetic products, allowing companies to improve product features based on negative feedback (Kim & Kang, 2018). The advantage of sentiment analysis lies in its ability to quickly assess the general tone of consumer feedback, providing actionable insights for marketing and product development (Pang and Lee, 2008). However, a limitation of sentiment analysis is its difficulty in detecting nuances such as sarcasm, which can sometimes lead to inaccurate sentiment classification (Liu, 2012).

Topic modeling, such as Latent Dirichlet

Allocation (LDA), is another key text mining technique used in review analysis. This method helps in discovering the underlying topics or themes present in a large corpus of text. In past research, topic modeling has been applied to categorize consumer reviews into topics such as price, product quality, or delivery service, enabling companies to understand which aspects of their products or services are most frequently discussed (Blei et al., 2003). For example, studies analyzing customer feedback for skincare products using LDA have found that consumers often focus on attributes like product effectiveness, packaging, and pricing, providing companies with valuable insights for product enhancement (Guo et al., 2022). While topic modeling is effective in identifying major themes, it can sometimes oversimplify the data by clustering reviews into broad categories, losing finer details in the process (Boyd-Graber et al., 2017).

Named Entity Recognition (NER) is used to identify and categorize entities such as product names, brands, locations, or customer demographics within the text. In the context of review analysis, NER can extract product-specific details and allow businesses to track how often their brand is mentioned alongside competitors. Past studies using NER have successfully identified how specific brands are perceived by customers in relation to their competitors, helping companies adjust their market positioning (Finkel et al., 2005). The benefit of NER lies in its ability to extract highly relevant and specific information from reviews. However, it can struggle with ambiguous or less structured text, leading to challenges in accurately categorizing all relevant entities (Ritter et al., 2011).

2.2 Review Analysis of Cosmetic Product

In recent years, several studies have focused on analyzing cosmetic product reviews using various text mining techniques, each of which has demonstrated specific advantages and limitations in extracting insights from consumer feedback. One such study by Park et al. [2021] applied sentiment analysis to a large dataset of cosmetic reviews gathered from online platforms to assess customer satisfaction and dissatisfaction. The researchers found that sentiment analysis could efficiently determine the overall tone of the reviews, providing a quick understanding of consumer attitudes toward different product features, such as moisturizing effects and fragrance. The strength of this method lies in its scalability, allowing it to process large volumes of data rapidly. However, the study also revealed a significant limitation: sentiment analysis struggled to interpret nuanced language, such as sarcasm or complex expressions of dissatisfaction, leading to occasional misclassifications. This limitation suggests that while sentiment analysis is useful for identifying general trends, additional methods may be needed to capture more subtle consumer insights [Park et al., 2021; Liu, 2012].

In another study, Guo et al. [2022] employed topic modeling, specifically Latent Dirichlet Allocation (LDA), to categorize the primary topics discussed in online reviews of luxury skincare products. The authors identified key themes such as product quality, price, and brand loyalty. Topic modeling is particularly effective in uncovering hidden patterns and trends within large datasets, allowing researchers to determine which aspects of a product are most frequently discussed by

consumers. However, Guo et al. [2022] noted that LDA tends to group reviews into broad categories, which may oversimplify the data and obscure finer details, such as specific sub-categories of product use or customer preferences. This limitation indicates that while topic modeling is useful for identifying overarching themes, it may require more detailed methods to fully understand consumer behavior [Guo et al., 2022; Boyd-Graber et al., 2017].

A study by Clara et al. [2020] expanded on traditional sentiment analysis by incorporating aspect-based sentiment analysis (ABSA) to analyze customer reviews of cosmetic products. This approach allows for a more detailed examination by breaking down reviews into specific product attributes, such as packaging, texture, and efficacy, and then analyzing the sentiment associated with each attribute. The primary advantage of ABSA is its precision, as it provides more targeted insights into what customers like or dislike about particular aspects of a product. However, the study found that ABSA requires substantial pre-processing of the data and is computationally intensive, which can make it less efficient when analyzing extremely large datasets. This limitation suggests that while ABSA offers more granular insights, its application is best suited for smaller or well-structured datasets [Clara et al., 2020; Liu, 2012].

Another study by Aldunate et al. [2022] combined natural language processing (NLP) techniques with machine learning algorithms to predict customer satisfaction based on cosmetic reviews. The researchers utilized a supervised learning approach, training models to predict whether a review was positive or negative based on linguistic features ex-

tracted through NLP. The strength of this approach lies in its high accuracy in classification tasks, particularly when enough labeled data is available for training. However, the study also noted that the success of machine learning models depends heavily on the quality and quantity of the training data. Poorly labeled or imbalanced datasets can result in lower accuracy and biased predictions, highlighting the need for careful dataset preparation in such applications (Aldunate et al., 2022; Liu, 2012).

These studies demonstrate that different text mining techniques offer distinct advantages and limitations when analyzing cosmetic reviews. Sentiment analysis is efficient in determining overall customer sentiment but may struggle with complex language. Topic modeling is excellent for identifying trends and major themes but can oversimplify the data. Aspect-based sentiment analysis provides more detailed insights into specific product attributes, though it requires intensive data processing. Finally, combining NLP with machine learning delivers high accuracy in predictive tasks, but it relies heavily on well-labeled data to achieve optimal performance. Thus, researchers often need to combine multiple approaches to mitigate the weaknesses of individual methods and obtain a comprehensive understanding of consumer feedback.

3. Research Methodology

3.1 Data Collection and Preprocessing

For this study, the focus was placed on analyzing consumer reviews of the Sulwhasoo Jaum two-piece set, a popular Hanbang cosmetic product. To identify the most relevant

product for review analysis, the top 10 Korean cosmetic brands were searched on the largest Korean portal, Naver, and the largest Chinese portal, Baidu, for the year 2022. Based on the results, the Sulwhasoo Jaum two-piece set was selected as it garnered the most consumer interest in both markets.

The data collection period spanned from January 1, 2021, to December 31, 2021. During this period, a total of 7,000 consumer reviews for the Sulwhasoo Jaum two-piece set were collected from Naver for Korean consumers and an additional 7,000 reviews were collected from Baidu for Chinese consumers. The reviews captured a wide range of consumer experiences and opinions regarding the product's effectiveness, quality, price, and other relevant factors.

Before conducting the analysis, the data underwent several preprocessing steps to ensure accuracy and reliability. These steps included removing duplicate reviews, filtering out irrelevant or spam content, and cleaning the text data by eliminating special characters, excessive whitespace, and stopwords. The cleaned data was then tokenized and prepared for topic modeling analysis, ensuring that the final dataset was suitable for extracting meaningful insights from the consumer feedback.

3.2 Topic Modeling Analysis Procedure

The topic modeling analysis for this study was conducted using the preprocessed Hanbang cosmetic review data collected from Naver for Korean consumers and Baidu for Chinese consumers. The main objective was to uncover the underlying themes within the consumer reviews and compare the perceptions of consumers from both countries regarding Sulwhasoo's Jaum two-piece set.

Using Latent Dirichlet Allocation (LDA), a widely-used method for identifying latent topics in text data, the analysis aimed to find the optimal number of topics that best captured the key themes in the reviews.

To determine the best number of topics, various models were tested with topic numbers ranging from 3 to 10. After evaluating each model, it was found that the four-topic model provided the highest coherence score, which measures how well the topics are related and interpretable. Based on this, four topics were chosen as the optimal number for both the Korean and Chinese review datasets.

Once the data was preprocessed, which included cleaning the text, tokenizing it, and reducing words to their base forms, the LDA algorithm was applied to the review datasets separately for each country. The model revealed four key topics in both the Korean and Chinese reviews, with each topic represented by a set of frequently co-occurring words. In order to improve the accuracy and interpretability of the topics, the parameters of the LDA model were tuned, including the document-topic and word-topic distributions. This optimization process ensured that the topics generated by the model were distinct and provided meaningful insights.

4. Topic Modeling Analysis Results

4.1 Analysis Results of Korean Reviews

Based on <Table 1>, the four topics identified in the Korean consumer reviews for Sulwhasoo's Jaum two-piece set can be explained as follows:

4.1.1 Gifts

This topic is centered around the use of

Sulwhasoo products as gifts. The most frequent terms associated with this topic include "gifts," "Chuseok," "birthday," "holidays," and "give." These terms suggest that Korean consumers often purchase this product as a gift, particularly for special occasions such as Chuseok (a major Korean holiday) and birthdays. The reviews likely highlight the product's premium quality and suitability as a thoughtful, luxurious present for loved ones, making it popular during holiday seasons and celebrations.

4.1.2 Price

The second topic revolves around the price and affordability of the product. The top related words include "cheap," "price," "discount," "order," and repeated mentions of "cheap." This suggests that Korean consumers are concerned about the cost of the product, with many discussing whether it is reasonably priced or available at a discount. Reviews likely touch on the perceived value of the product in relation to its price, with some consumers expressing satisfaction when they find it on sale or at a lower price point.

4.1.3 Delivery

The third topic focuses on delivery experiences, particularly negative ones. Key terms such as "disappointment," "late," "delivery," "not yet," and "purchase" indicate that many consumers faced issues with the timeliness of their orders. Reviews in this category likely express frustration about delayed deliveries, possibly affecting customer satisfaction. These complaints could be related to high expectations for prompt service, especially when purchasing a high-end product like Sulwhasoo.

4.1.4 Functionality

The final topic concerns the product's functionality, specifically its effectiveness for skincare. Terms such as "dry," "skin," "seasonal change," "product," and "itchy" appear frequently, pointing to discussions about how the product performs in relation to skin dryness, particularly during seasonal transitions. Many reviews likely focus on whether the product helps to relieve dry skin or irritation, with consumers evaluating its effectiveness in dealing with specific skin concerns like itchiness. This topic reflects consumer interest in the actual benefits of the product, particularly in terms of its ability to address seasonal skincare needs.

〈Table 1〉 Topics and Relative Terms of reviews from Korean Consumers

Topics	Top-5 most relative terms for each topic	Estimated term frequency within the selected topic
1 (Gifts)	Gifts	0.113
	Chuseok	0.085
	Birthday	0.071
	Holidays	0.069
	Give	0.065
2 (Price)	Cheap	0.054
	Price	0.047
	Discount	0.042
	Cheap	0.039
	Order	0.036
3 (Delivery)	Disappointment	0.084
	Late	0.052
	Delivery	0.045
	Not yet	0.040
	Purchase	0.020
4 (Functionality)	Dry	0.080
	Skin	0.067
	Seasonal Change	0.056
	Product	0.035
	Itchy	0.030

These four topics, derived from the most frequent terms, provide a clear picture of Korean consumers' primary concerns and interests when reviewing Sulwhasoo's Jaum two-piece set, ranging from its suitability as a gift to its affordability, delivery service, and skincare effectiveness.

4.2 Analysis Results of Chinese Reviews

Based on 〈Table 2〉, the four topics identified in the Chinese consumer reviews for Sulwhasoo's Jaum two-piece set can be explained as follows:

4.2.1 Price

This topic is focused on the price and shopping experience related to the product. The most frequent terms associated with this topic include "cheap," "shopping," "price," "satisfied," and "purchase." These words suggest that Chinese consumers are highly attentive to the cost of the product and their overall shopping experience. The reviews likely reflect consumer satisfaction when they find the product at a lower price or through a good shopping experience. Price sensitivity is clearly important, with discussions around whether the product offers good value for money and the impact of discounts or special offers.

4.2.2 Gifts

Similar to the Korean reviews, this topic revolves around the use of Sulwhasoo as a gift. Key terms include "gifts," "parents," "satisfied," "birthday," and "Chuseok." In China, many consumers seem to purchase the product as a gift, especially for their parents. The frequent appearance of the term "parents" indicates that filial piety may play a role in these

purchases, with consumers expressing satisfaction in gifting a high-end, prestigious brand like Sulwhasoo to their family members on occasions like birthdays and holidays. This suggests that the product is viewed as a symbol of care and respect, making it an ideal gift for important family members.

4.2.3 Functionality

This topic centers around the product's performance, particularly its effects on the skin. The most frequent terms here include "effect," "dry," "disappointed," "skin," and "usage." These terms show that Chinese consumers are focused on how well the product addresses specific skincare concerns, particularly dry skin. While many reviews likely mention positive effects, the presence of the word "disappointed" indicates that not all users were satisfied with the product's results. This suggests that while some consumers find the product effective for treating dryness, others may have higher expectations or specific skin concerns that were not fully addressed.

4.2.4 Quality

The fourth topic highlights consumer discussions about the overall quality of the product. Frequently occurring words include "quality," "product," "return," "don't know," and "different." These terms suggest that Chinese consumers are not only concerned with the functionality of the product but also its general quality and whether it lives up to their expectations. The mention of "return" indicates that some consumers may have been dissatisfied to the point of returning the product. Additionally, terms like "don't know" and "different" suggest uncertainty or surprise, possibly indicating that the product did

not meet consumers' preconceived notions of what it should deliver. Quality seems to be a critical factor in these reviews, with some expressing doubt about whether the product justifies its premium positioning.

These four topics offer a comprehensive look at what Chinese consumers value and critique when reviewing Sulwhasoo's Jaum two-piece set, from its price and suitability as a gift to its effectiveness and overall quality. This analysis highlights the importance of managing consumer expectations, particularly around product performance and quality, to maintain satisfaction in this market.

⟨Table 2⟩ Topics and Relative Terms of Reviews From Chinese Consumers

Topics	Top-5 most relative terms for each topic	Estimated term frequency within the selected topic
1 (Price)	Cheap	0.084
	Shopping	0.069
	Price	0.028
	Satisfied	0.026
	Purchase	0.022
2 (Gifts)	Gifts	0.155
	Parents	0.100
	Satisfied	0.087
	Birthday	0.072
	Chuseok	0.069
3 (Functionality)	Effect	0.101
	Dry	0.084
	Disappointed	0.050
	Skin	0.048
	Usage	0.044
4 (Quality)	Quality	0.128
	Product	0.055
	Return	0.053
	Don't know	0.040
	Different	0.034

5. Conclusion and Business Implication

5.1 Conclusion

The topic modeling analysis of Korean and Chinese consumer reviews for Sulwhasoo's Jaum two-piece set reveals both similarities and differences in how these two groups perceive Hanbang cosmetics. In both markets, gifting and price emerged as prominent topics, indicating that Sulwhasoo is frequently purchased as a gift for loved ones, and that consumers in both countries are sensitive to the product's price. The high value placed on gifting, particularly during holidays and special occasions, is a common thread between Korean and Chinese consumers, with both groups expressing satisfaction with the product's premium image and suitability as a luxurious gift.

However, notable differences were also observed. For Korean consumers, delivery and functionality were significant topics of discussion, with many reviews highlighting frustrations with delayed deliveries and concerns over whether the product effectively addressed specific skin issues, such as dryness during seasonal changes. In contrast, Chinese consumers focused more on product quality and effectiveness, with some expressing dissatisfaction when the product did not meet their expectations for premium skincare. While Chinese consumers showed a strong emphasis on the product's overall quality, including cases where they returned the product due to unmet expectations, Korean consumers were more focused on their purchase and delivery experiences.

In terms of satisfaction, Korean consumers expressed contentment when the product was obtained at a discounted price or when it func-

tioned well for treating skin issues, particularly dryness. Similarly, Chinese consumers were satisfied when the product met their high standards for quality and effectiveness, especially when used as a thoughtful gift for parents. On the other hand, dissatisfaction among Korean consumers primarily stemmed from delays in delivery, while Chinese consumers were more likely to express disappointment when the product's quality did not match their expectations or when its effects on their skin were underwhelming.

These insights from the topic modeling analysis highlight the need for companies like Sulwhasoo to address both markets' specific concerns. For the Korean market, improving logistics and ensuring faster, more reliable delivery could enhance consumer satisfaction, while in China, maintaining high product quality and ensuring consistent performance will be crucial to meeting consumer expectations in this highly competitive market.

5.2 Business Implications

The topic modeling analysis of consumer reviews for Sulwhasoo's Jaum two-piece set reveals key factors that are essential for the success of Hanbang cosmetics in both the Korean and Chinese markets. These insights provide valuable guidance for companies aiming to strengthen their position in these markets, as well as for those seeking to expand into the global beauty industry.

In the Korean market, two critical factors emerged from the analysis: price sensitivity and delivery experience. Korean consumers showed a strong concern for the price of Hanbang cosmetics, often seeking discounts or promotional offers to make high-end prod-

ucts more affordable. Therefore, it is important for companies to adopt competitive pricing strategies, including regular promotions or limited-time discounts, to attract price-conscious consumers. Additionally, delivery delays were a source of dissatisfaction for many Korean consumers. To enhance customer satisfaction and loyalty, companies need to focus on improving logistics and delivery services, ensuring timely and reliable product shipments. Efficient delivery not only improves customer experiences but also strengthens brand trust in a highly competitive market.

In the Chinese market, the most important factors are product quality and gifting culture. Chinese consumers place a strong emphasis on the overall quality and effectiveness of the product. To succeed in this market, Hanbang cosmetic brands must consistently deliver high-quality products that meet the premium expectations of Chinese consumers. Any perceived drop in quality or inconsistency could lead to dissatisfaction and negative reviews. Additionally, the gifting culture in China plays a significant role in purchasing decisions. Marketing campaigns that position Hanbang cosmetics as a luxurious and thoughtful gift for parents and loved ones, especially during key holidays, can help increase brand appeal. Companies should also consider creating special gift sets or limited editions to cater to this market's gifting preferences.

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