



Audience Feature Extraction Method for Cross-Border Cosmetics Online Marketing in Japan

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Abstract. In the context of economic globalization, combined with the development conditions of e-commerce, the trade between countries is becoming closer and closer. In recent years, cosmetics online marketing has become the focus of all sectors of society. Taking Japanese cross-border cosmetics as the research object, this paper makes an in-depth analysis on the characteristics of its online marketing audience. Through the definition of the concept of cross-border e-commerce and the analysis of the current situation of cross-border cosmetics in Japan, this paper comprehensively expounds the development status from two perspectives. Explore Japan's cross-border cosmetics market positioning, divide the market level of women's needs, control product quality risks, optimize the online marketing mode of e-commerce platform, identify audience preferences with hybrid recommendation algorithm, investigate the information recognition degree of women consumers, obtain users' comprehensive similarity, establish feature extraction mechanism, and finally realize the design of feature extraction method.

Keywords: Japanese cross-border cosmetics · Online marketing · Audience groups · Feature extraction · E-commerce platform · Electronic commerce

1 Introduction

With the development and popularization of high-tech information technology and Internet, e-commerce has gradually crossed the border and played a great role in the trade between countries. Traditional trade has a long time and high trade cost. Based on Internet technology, e-commerce can realize information interconnection and real-time communication. Using e-commerce to carry out cross-border trade has become an important form of transformation and upgrading of China's foreign trade industry. Cross border e-commerce is conducive to simplifying the transaction process, saving transaction costs, improving transaction efficiency, gradually becoming China's new economic growth point and foreign trade mode, and then changing the traditional world trade pattern [1–3]. At present, many foreign trade companies in China have introduced information systems and built information platforms to develop cross-border e-commerce and enhance their competitiveness [4, 5]. As a populous country, China's demand and consumption

of cosmetics are also amazing. At present, it ranks second in the global cosmetics consumption ranking, and under the development trend of the Internet era, it has widened the development channels for China's cosmetics industry, resulting in an increasing trend in cosmetics sales. In fact, during the period of reform and opening up in 1978, international cosmetics have poured into the Chinese market, and many enterprises have won certain market opportunities. Through the investigation of Chinese consumption demand and Asian skin characteristics, they have made certain achievements in cosmetics R & D and sales, and formed a certain brand effect. Of course, this success is based on a certain marketing strategy of market segmentation and distribution channels. Throughout the field of China's cosmetics market, European and American brands enjoy a certain position. P & G is a leader in China's cosmetics market, accounting for nearly 16% of the market, and L'Oreal also has nearly 11% of the market share. In addition to these company products, European and American cosmetics brands have also become popular in the Chinese market. It can even be said that Chinese cosmetics are led by European and American cosmetics to a certain extent, and have achieved considerable economic benefits. This successful development case has stimulated the investment attention of other international well-known brands all the time, and is eager to try for China's cosmetics market. It points out that the consumption characteristics of Chinese cosmetics are obviously reflected in the influence of brand power, while the varieties of Chinese local cosmetics industry are relatively single, The quality is in contradiction with the increasing demand of consumers. The enterprise's R & D is relatively backward and does not produce targeted products. Therefore, the development of enterprises is at a disadvantage, and there is no more international local brand for Chinese cosmetics in the international market, which is the lack of Chinese cosmetics market. Many products have the problem of imitation without actual innovation. Take product innovation as their own development characteristic advantage, and pay attention to multi-channel promotion and the driving role of stars and public figures. Cosmetics marketing can also be carried out through accurate market segmentation and positioning. This method also has reference significance for Japanese cross-border cosmetics companies developing in China to a certain extent. With the progress of the times and the continuous improvement of women's social status, women consumers have become the main force in the consumer market. At present, the academic research materials on the online marketing audience of cross-border cosmetics in Japan are not rich enough and need to be further discussed.

2 Development Status of Cross-Border E-commerce and Cosmetics

2.1 Definition of Cross Border E-commerce

In a broad sense, cross-border e-commerce can be regarded as foreign trade e-commerce to a certain extent. It refers to the trade entities belonging to different customs territories to achieve import and export trade activities by using e-commerce technology. Cross border e-commerce also involves data exchange, capital transfer, information transmission, etc. all international trade can be called cross-border e-commerce [6]. Electronic data exchange, which originated in the 1960s, is the predecessor of the development of cross-border e-commerce. Electronic data exchange abandons the traditional paper form and

exchanges data directly through the network, which saves the time and economic cost of both sides and is welcomed by the market. Later, with the progress of technology, funds transfer, information service and payment security system other than data exchange were developed, and cross-border e-commerce activities had a certain scale. In a narrow sense, cross-border e-commerce refers to cross-border online retail. Cross border e-commerce can be divided into different forms according to different elements [7, 8]. According to different service objects, it can be divided into four types: business to business, business to consumer, business to government and consumer to consumer. Business to business mainly refers to trade between enterprises through information technology platform. Business to consumer means that enterprises provide products to users through cross-border e-commerce platforms. Enterprise to government means that the government purchases products or services operated by enterprises through the platform. Consumer to consumer transaction mode refers to individual goods trade and exchange through the platform. The cross-border e-commerce referred to in this paper mainly refers to the cross-border e-commerce at the narrow level. In 1999, Alibaba took the lead in opening the Internet transaction mode, using the Internet to connect domestic suppliers with overseas customers, resulting in the e-commerce of foreign trade in China. Since then, the Internet has gradually approached thousands of households in China, which has had a profound impact on the whole social economy. The number of people using computers to access the Internet is increasing all over the world, the number of enterprises using information systems is increasing, the data encryption technology is constantly updated, and the intelligent logistics system is also in the process of R & D and updating. Under this background, China's cross-border e-commerce has also achieved great development. Gradually realized the transformation and upgrading within the industry, as shown in Table 1:

According to Table 1, compared with cross-border B2C, the main body of cross-border trade has changed, and the trend of fragmentation and miniaturization is constantly emerging. The development of cross-border e-commerce has not only changed personal life, but also changed the development model of China's cosmetics industry.

2.2 Analysis on the Current Situation of Cross-Border Cosmetics in Japan

The marketing strategy of Japan's cross-border cosmetics market in China is based on certain segmentation principles. It is to divide the environmental observation of the Chinese market and the consumption concept of Chinese people of all ages, and adopt targeted marketing methods in the five market segments of top, advanced, medium and high, medium and low. Targeted sales of cosmetics needed by consumer groups and different grades of consumers' skin through market segments [9–11]. In terms of marketing channels, it is not difficult to find that Japan's top cosmetics representatives represented by CPB, the Ginza and pola are concentrated on the counters of major shopping malls, because this channel can better promote consumers' product experience, personally feel the use effect of products at the first time, and provide convenience for after-sales service, so as to increase the subsidiary value of products, This service itself is one of the selling points. China's cosmetics market structure is relatively complex. According to the purpose of use, it can be divided into cleaning, basic, beauty, curative effect, hair and other categories. From the recent China consumer's cosmetics concern

Table 1. Development history of cross-border E-commerce

Stage/development model	Budding period (1997–2007)	Development period (2008–2013)	Outbreak period (2014–so far)
Business Model	Online display, offline transactions, foreign trade information services, not involving transactions	Form an online trading platform to realize the electronization of all links of e-commerce and effectively open up the upstream and downstream supply chain. There are mainly two modes: B2C and B2B	Online service of the whole industry chain
Profit Model	Charge membership fee	Diversified Revenue: 1. Backward charge and commission 2. Obtain value-added income such as marketing promotion, payment service and logistics service	Diversified Revenue: 1. Backward charge and commission 2. Obtain value-added income such as marketing promotion, payment service and logistics service
Typical representative	Alibaba resource station, made in China	Lanting Jishi Express	Tmall global, Netease koala overseas shopping, Jumei premium products, ocean wharf, etc

category, people pay the most attention to skin care products, and secondly, the demand for make-up, the attention to hair care products and perfume. This shows that China's consumers have more concerns about the consumption characteristics of cosmetics with skin care and cosmetics. The biggest advantage of online sales is that it is convenient and fast. There is no need to spend time selecting products, which meets the consumption needs of young people.

3 Audience Feature Extraction Method for Cross-Border Cosmetics Online Marketing in Japan

3.1 Exploring Japan's Cross-Border Cosmetics Market Positioning

Market positioning is a prerequisite for any enterprise to enter the market smoothly. This also exists in Japanese cosmetics enterprises, and there are multiple types of cosmetics in Japan. Among these brands with the same use effect and different types, consumer layered dumping is also worth considering. China's developed cities are concentrated in coastal areas and major provincial capitals. Korean enterprises in cosmetics often

start from these areas. The main reason is that they have the characteristics of “three highs”, that is, the average consumption level, economic level and population are high. The market for women’s demand is divided into three levels, which are divided by coverage. That is, women aged 18–40 are subdivided, which is a coverage division of age dimension covering economic income and other factors, with clear priorities. For women at this stage, the focus is on consumers aged 25–30 who have a certain economic foundation. Such groups have the protection of economic income, and the speed of human metabolism is accelerated after the age of 25, Skin aging, water shortage and other problems are obvious, which maximizes the number of potential consumers. It also has a sense of innovation and attempt, has low brand attachment, is deeply penetrated by Japanese makeup style, and is willing to try new products. The concept of consumption focuses on “innovation” and “difference”, pursues product performance, pays attention to personalized selection, and has a certain purchasing power for high-end products, but the purchasing power of top cosmetics brands is not as good as that of women in 30–40. Now, the most popular Japanese cosmetics for the Post-00 group still belong to the middle and low-grade cosmetics with relatively popular prices. The typical characteristic of this group is that most of them are studying in Colleges and universities, with low economic ability, but also have a greater pursuit of cosmetics [12, 13]. Therefore, it is reasonable that brands such as canmake are favored by this group. Moreover, the skin problems that perplex young women due to environmental and dietary reasons, such as closed mouth, acne and large pores, have also attracted the attention of many consumers to the field of pharmaceutical makeup. Japanese products for this group, such as FANCL, are also popular and suitable for younger people. Japanese cosmetics enterprises take age income as the basis for market positioning investigation in Japanese cosmetics marketing strategy in China, which is reasonable and scientific, and market-oriented marketing production is also in line with the market law [14, 15]. However, many enterprises have not noticed the rapid change of China’s cosmetics market environment, blindly following the trend of production, resulting in market saturation and serious economic losses caused by unsalable products. In Japan’s cosmetics marketing strategy, there are certain diversified requirements for product R & D and creation, which is to fully meet the needs of consumer groups of different genders, different regions and different age groups. Besides, the product’s type not only covers the skin products of the face, but also produces products for hair care and perfume, and also for men’s production of special cleansing cream and lotion. Because men also have the right to pursue beauty and pay more and more attention to exterior decoration and skin care. In terms of product efficacy, for example, several series of Kanebo can slow down the skin aging and collagen loss of middle-aged women. SHISEIDO series of eye cream and hyaluronic acid are also favored by consumers because of the effect of water desalination and fine lines. The essence of SKII has great effect on water supplement and shrinkage pores of young women. CUREL sets are natural and non irritating to pregnant women and children. This is the right remedy for the needs of different consumers according to the product function. Based on the above description, complete the steps to explore the positioning of Japan’s cross-border cosmetics market.

3.2 Optimizing the Online Marketing Mode of E-commerce Platform

Online marketing needs to take the e-commerce platform as the media and combine the corresponding marketing strategies to optimize the traditional marketing model. Such enterprises focus their development direction on cosmetics and cosmetics surrounding fields, and provide platform enterprises with in-depth information and related services about cosmetics. Their business is aimed at similar products [16, 17]. For example, xiaohongshu, Jumei premium products, honey bud, meimeishuo and mushroom Street are vertical enterprises for cosmetics products. This paper will take xiaohongshu as a case for analysis. The cross-border e-commerce platform for comprehensive cosmetics refers to an enterprise that only takes the cosmetics field and the fields around cosmetics as one of the development directions. In addition to providing information and services for products in cosmetics and its surrounding fields, it also engages in other product fields unrelated to cosmetics. Such platforms in China include JD beauty, tmall global, Dangdang, etc. This paper chooses xiaohongshu as a vertical cross-border e-commerce platform in the cosmetics industry not because of its large scale. Xiaohongshu's market share is not the highest, but xiaohongshu is developing rapidly. The online community e-commerce model it creates is unique among the cross-border e-commerce platforms in the cosmetics industry, and has strong research value and reference significance. The operation mode of xiaohongshu is shown in Fig. 1:

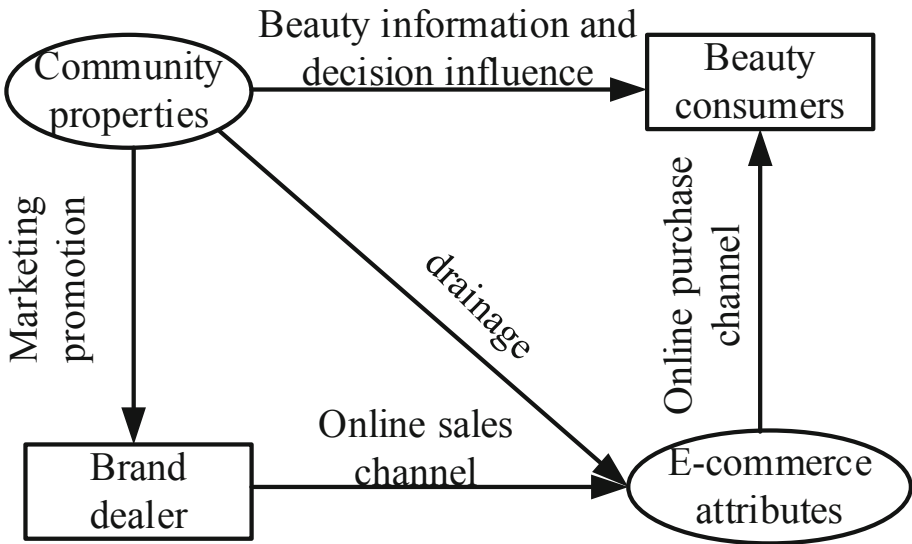


Fig. 1. Xiaohongshu operation mode

As shown in Fig. 1, brands carry out marketing and promotion activities in the online community. Consumers get corresponding information in this community. Those who are willing to buy can directly place an order in the e-commerce section of the community. The community plays a role in attracting e-commerce by providing consumers with beauty information. A complete cross-border e-commerce platform includes six links:

commodity procurement and management, payment, logistics, customs clearance and commodity inspection, marketing and after-sales service. Among them, old e-commerce platforms such as tmall global and jd.com have formed strong barriers in the fields of procurement, payment and logistics with their own advantages. As an emerging cross-border e-commerce enterprise, the key to breaking the competition barrier lies in how to obtain high-quality supplier resources in the procurement link. It adopts the mode of direct cooperation with brands such as Japan and South Korea, implements the bonded self-supporting mode, and controls the quality risk of products. In addition, the traffic conversion rate of xiaohongshu is high. The specific forms of cosmetics cross-border e-commerce trade include direct mail, bonded and goods collection. Among them, the direct mail mode and bonded mode are the two most basic modes in cross-border e-commerce trade, and the goods collection mode is equivalent to an upgraded version of the direct mail mode. This mode uses centralized transportation instead of scattered transportation to reduce costs. Cosmetics import direct mail mode refers to the trade behavior that domestic consumers purchase beauty products and skin care products through cosmetics cross-border e-commerce platform, and these products are directly sent to consumers from abroad by mail, sea parcels, etc. Cosmetics import and preparation mode refers to the trade behavior that platform enterprises purchase cosmetics and peripheral products mainly sold through centralized procurement, cross-border e-commerce enterprises directly pick up goods from the special supervision area and then send them to consumers through logistics. The bonded mode is to enter the country first and start customs clearance after the user places an order, while the direct mail mode is to start distribution after the user places an order and need to go through customs clearance procedures when entering the country. The main difference between the two lies in the order of order placement and customs clearance. Based on this, complete the steps of optimizing the online marketing mode of e-commerce platform.

3.3 Hybrid Recommendation Algorithm to Identify Audience Preferences

The main audience of cross-border cosmetics online marketing in Japan is female consumers, and female consumers are a special consumer group. They are born to pay more attention to emotional communication than men. This congenital psychological feature makes it easy for women to consult others when making consumption decisions. In the trend of online shopping, online word-of-mouth will affect the purchase intention of female consumers [18–19]. The theory of consumer behavior analysis holds that the generation and change of consumer behavior is a long process, which includes four stages: formation, prototype, performance and change. The information received in each stage will have a specific psychological orientation for consumers and affect consumer behavior. Generally speaking, consumer behavior includes motivation generation, purchase decision and purchase behavior process. Motivation generation includes internal demand and external factors. The more comprehensive consumers understand the product information, the easier it is to produce purchase behavior, and the higher the perceived evaluation of the product. Therefore, the purpose of consumer behavior analysis is to adopt different information strategies for consumers through feature and demand analysis, so as to improve consumers' understanding of the product as much as possible. As the audience group of cross-border cosmetics online marketing in Japan, the

preference of female consumers is not completely independent, and there will be interaction between friends and relatives. Therefore, the average preference of user groups for beauty products is defined as:

$$\hat{D} = \sum_{l \in t} g \cdot \frac{1}{|t|} \quad (1)$$

In formula (1), t represents the randomly selected users, g represents the user's positive feedback on the item, and l represents the total number of users. On this basis, the loss function expression formula of the specified beauty products is obtained as follows:

$$L = - \sum_{j=1}^i \sum_{e \in k} + \ln j(G - \hat{h}) \quad (2)$$

In formula (2), i, j represents two adjacent users in the data set, e represents similar users, k represents the integer set, G represents the regularization coefficient, and h represents the implicit feedback data. In the e-commerce scenario, there are many types of implicit feedback data of user behavior, which is called heterogeneous implicit feedback data. BPR and a series of improved algorithms of BPR can not be directly used for recommendation. The conventional channels for female consumers to buy cosmetics mainly analyze the general purchase methods of female consumers' cosmetics from the aspects of network, comprehensive shopping malls, counter stores, purchasing overseas shopping and other channels. The survey found that the cosmetics purchased by the interviewed samples are mainly online channels, followed by counters, stores, purchasing agents and overseas shopping. Based on this, complete the steps of identifying audience preferences.

3.4 Establishing Feature Extraction Mechanism

Under the e-commerce platform, the user's behavior data represents different user preferences, that is, the user's heterogeneous implicit feedback data reflects the uncertainty of user preferences [20]. Heterogeneous implicit feedback contains a variety of user behavior data. The user's behavior type and behavior frequency of a product represent the user's different preference for the product. Therefore, the user's relative preference for two commodities is sometimes obvious. For example, it is generally believed that the user's preference for a commodity with multiple clicks is stronger than that with only one click, the user's preference for the final purchased commodity is stronger than that with only one click, and the user's preference for the final purchased commodity is stronger than that without behavior. However, there are still some relative preferences that cannot be directly judged by experience. Therefore, in the e-commerce scenario, due to the particularity of heterogeneous implicit feedback data, the recommendation algorithm needs to solve two key problems in the definition of user preference: first, how to measure the user's preference between two goods. Second, how to measure the confidence of this relative preference. Consumers' purchase of cosmetics includes the purpose of use and brand value. They mainly obtain information through the Internet, take the price as the main factor affecting their choice, and prefer to choose plain cosmetics. Subsequently,

further analysis was conducted on consumers who had purchased products on a certain platform, and it was found that consumers obtained cosmetics information more through online channels. Therefore, it is necessary to analyze the commodity attributes, classify the commodities, calculate the total score of users on each commodity attribute, and get the user preference similarity. The two kinds of similarity are linearly combined to obtain a more accurate user comprehensive similarity, find the user nearest neighbor set, predict the user score, and get the recommendation list. The results of clustering based user similarity and preference based user similarity are selected for linear combination. Firstly, the user similarity obtained by the two algorithms is calculated separately, and the appropriate value is taken through the balance factor to make the best user comprehensive similarity result. Spectral clustering is to transform the clustering problem into a graph partition problem. This algorithm needs to cluster the users, regard the users in the set as the vertices in the graph, and determine whether there are edges between users according to the proximity discrimination method. If there are edges, the edge weight is the similarity between users. After determining that there are edges between users, calculate the edge weight between users:

$$f = \exp\left(\frac{-\|p, q\|^2}{2\beta^2}\right) \quad (3)$$

In formula (3), p, q represents two adjacent users respectively, and β represents similarity parameters. In the investigation of marketing media preference of female consumers, firstly, according to the division of traditional media and new media, investigate the use preference and information recognition of different media of female consumers, and then divide the traditional media into TV broadcasting platform, newspaper and magazine, square marketing, outdoor advertising and other categories according to the division of different media categories in traditional media and new media, And further divide the specific categories of detailed platforms, and investigate the platform use and information recognition of female consumers. In the new media, search engines, social networking platforms, shopping websites and post bar forums, mail messages and so on are taken as the basis of division, and further specific platforms are divided. Then, the platform application and information recognition of female consumers are investigated. Consumers said that online cosmetics are cheap and convenient. For example, JD's self operated cosmetics have guaranteed quality, open and transparent price, door-to-door delivery and very high cost performance. Other consumers trust the product quality of counters and specialty stores, and some consumers believe that buying cosmetics from overseas shopping, purchasing on behalf of others and other places of origin, on the one hand, makes the price cheaper and the quality better than that produced by OEM factories, so they choose this way to buy cosmetics. Based on the above description, the steps of establishing a feature extraction mechanism are completed.

4 Conclusion

This study attempts to use the post feminist perspective to focus on the female audience of cosmetics advertising on the basis of the body framework, focus on their consumption

habits in daily life, try to find the multiple meanings of “beauty” and confirm its internal tension, so as to further explore the subjectivity and hidden power mechanism in Discourse. Finally, it is found that according to the development trend of e-commerce and the current marketing strategy of cross-border cosmetics in Japan, it can be predicted that online marketing is an inevitable way to expand its influence, break regional restrictions and improve the awareness of female consumers. In the specific marketing methods, we will pay attention to the innovation of marketing to meet the needs of consumers and obtain consumers’ unique value recognition. Due to the limited research conditions, the research on other types of cross-border commodities is not thorough enough. In the future, we will continue to conduct in-depth research and achieve results.

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