*Research Article*

# Visual Analysis of Audience and Information Interaction of Brand Communication Data Based on Computer Vision

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With the rapid development of mass media, especially the rapid development of new media represented by the computer Internet in the world, the audience is no longer a reader, and the audience transmitted through the media is not simply the recipient of information but is paid more attention by academic researchers in various fields, and the concept of audience can be extended to many fields. With the advancement of media, the way of brand communication is also changing. The traditional research perspective believes that brand positioning is aimed at consumers, but from the perspectives of both sides, brand positioning should broaden its horizons and cover all audiences who receive brand information. The article takes the integration of "cold land black soil" agricultural product brands as the research core. First, the relevant concepts of "cold land black soil" and "agricultural product brand integration" are given the normative definition of the article research, and qualitative analysis is used to analyze the "cold land black soil." The status quo of the integration of "Black Earth" agricultural product brands is summarized from the aspects of integration positioning, existing products, base construction, business projects, and sales network construction. The main problems are relatively weak, imperfect marketing strategies, and loopholes in quality supervision; secondly, the analytic hierarchy process (AHP) is used to make a comprehensive quantitative analysis of the related factors affecting the brand integration of "black soil cold" agricultural products, and determine the brand awareness and consumer awareness.

## 1. Introduction

With the continuous development of media technology, the continuous upgrading of network infrastructure and application technology facilities, and the widespread use of mobile devices, these provide conditions for the transfer of information production and dissemination to mobile terminals. The Internet is experiencing a new revolution from PC to mobile. The communication environment of mobile Internet has brought profound changes to the communication itself, and the emergence of new communication paradigms and the relationship between transmission and reception have become an important topic of concern in academia and industry. The change in the communication environment is not only reflected in the fact that mobile media reconstructs the audience's lifetime and life scene, but also makes the keywords such as "traffic, portal, platform, user" in the previous PC era gradually replaced by "computer vision." The current scene is regarded as a tool and is widely used in media integration, press and publication, urban management, and other fields. In the field of brand communication, computer vision advertising, computer vision marketing and computer vision communication, and so on have repeatedly appeared in brand communication practice. Computer vision is not only a tool, but also gradually evolved into a kind of thinking, which affects the current brand communication. Therefore, based on the current practice of brand communication, this paper discusses the use of scene elements in brand communication in the context of the mobile Internet era, focusing on the core issue of the current situation, problems, and feasible and effective strategies of brand use of computer vision in the mobile Internet era.

Survival and business growth are inseparable from timely and effective brand communication. However, there

were conceptual or methodological misunderstandings in these early-growing Internet education initiatives when it came to understanding branding and brand communication. They believe that brands are limited to well-known, large, and mature companies. In fact, a brand is an asset of a company and a relationship between products and consumers. Companies at any stage of development need to invest in building and spreading their brands.

Through literature research, it can be seen that most of the research objects or case studies of local brands are based on large and mature businesses, and there are very few studies on small- and medium-sized business companies. In view of the development of Internet companies in recent years, there are few studies on the brand communication of Internet companies. Here, the article takes the corporate brand as the research purpose, which can play a supplementary role in the research on brand communication of this type of enterprises and has certain reference and practical significance for the brand communication of later enterprises.

## 2. Related Work

Experts at home and abroad have also conducted a lot of research on the visual analysis of information interaction between computer vision and brand communication data. Liu et al. examine the influence of luxury hotel brand, brand loyalty, brand awareness, perceived quality, and brand image on consumers' brand attitude and purchase intention, with brand performance as a background factor [1]. The purpose of Fritz et al.'s research is to establish links with previous authenticity research so as to gain a deeper understanding of the influencing factors of brand authenticity and the results of consumer surveys [2]. According to Barbu et al.'s research, many computer vision and medical imaging problems face the status quo of learning from large-scale datasets of observed features from millions of samples [3]. Kash et al. have made significant investments to support health information exchange (HIE) technologies that can be used to reduce readmission rates for patients in many community hospitals [4]. Ng et al. believe that in order to adapt to the era of information exchange through social networks, the orthopaedic community should incorporate social media communication into its approach to patient education [5]. Chen and Ye believe that with the increasing popularity of mobile social media among Chinese consumers, Western luxury brands are trying to connect with the Chinese market through popular social media [6]. However, due to the lack of relevant data and the methods used in these studies, there are some controversies, resulting in the relevant results not being recognized by the public.

## 3. Visual Analysis System Construction Design

*3.1. System Requirements Analysis.* Through the summary of visual analysis technology and the study of heuristic analysis methods, a basic framework for assisting users in data analysis and visualization model construction is obtained. Based on the research, this paper designs and implements an

analysis platform using heuristic data visualization analysis method, which is used to verify the practical value of the analysis method and practice some basic data analysis problems with the help of the platform. System design should give full play to the driving position of people in the data analysis process and use computer data analysis and visual analysis methods to simplify the operation process of data analysis, improve the efficiency of data analysis, and improve the effectiveness of data analysis results and lower the threshold limit for data analysts to use. It focuses on solving the difficulties in model selection, data screening, and information cognition in the process of visual analysis.

During the analysis process, the analysis results can be dynamically provided with the data changes. The process allows the analyst to focus the algorithm processing on the subdata set of interest, allows the analyst to ignore the subdata set that is not relevant to the problem, and reduces the interference of the data information in the visualization part, especially the interactive part. The new conclusions obtained in the calculation and analysis process are effectively displayed to the analysts, and the next possible operations are prompted. It supports dynamic interaction, parameter setting, and reasonably arranges the interaction form of the user interface [7].

In order to deal with the problems existing in the data visualization analysis process, the basic process of the heuristic data visualization analysis method can be decomposed into the following steps, as shown in Figure 1.

*3.2. The Practice of Heuristic Analysis.* The system combines the idea of heuristic analysis method with the construction of visual analysis system and focuses on the process of using heuristic analysis method for data exploration and data discovery. The main process of heuristic analysis can be applied to a specific practice by using a mapping method, as shown in Table 1. The heuristic analysis method is based on the EDA model in the main process of data exploration. Analysts select, filter, regroup, and view details of data in the visual image, which inspires the cognition of data and obtains information. The heuristic analysis method uses the recommendation function of the system to select appropriate visual display methods to display the excavated data information. The functional-level division of the system is combined with the system analysis function and interaction mode for comprehensive design [8].

*3.3. System Business Process.* According to the design idea of heuristic visualization analysis method, the system adopts the main business processing model of user binding, construction of analysis project, and analysis records stored in the result sharing display in the business process design. At the same time, it is necessary to fit the key business process of heuristic analysis method into the process of system analysis. The business process of the whole system can be mainly embodied in the mode of Figure 2. The background server is mainly responsible for data parsing, data analysis, model recommendation, and related data persistence operations. The browser side is
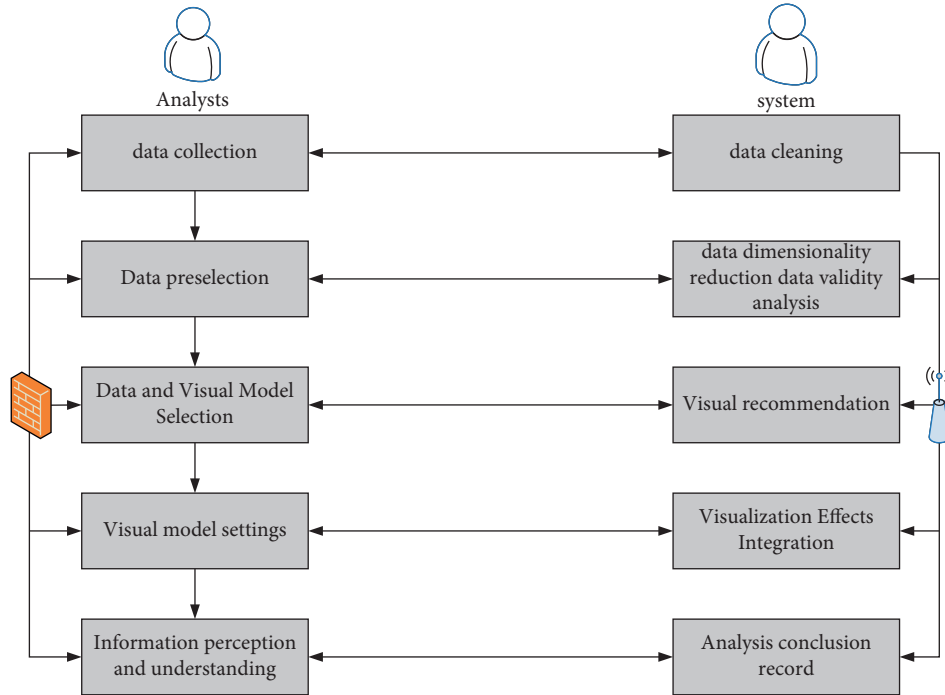
Figure 1: The basic process of heuristic analysis method.

Table 1: One way of mapping heuristic analysis to practice.

| Analysis process | User action | System operation | Interactive mode | Numerical value |
|---|---|---|---|---|
| Data preparation | Data set selection and import | Data analysis, data persistence, data cleaning and display | Take data file upload and database connection as the main model | 0.561 |
| Data preselection | Specify data ranges and dimensions | High-dimensional data dimensionality reduction, data attribute discrimination, feature analysis, validity analysis, etc. | The user performs data screening and analysis interface to display the data quality report | 1.563 |
| Data analysis | Analyze data quality, multiattribute association analysis | Data attribute correlation analysis and display | Select different data attributes to build visual icons and observe the relationship | 0.132 |
| Visual model recommendation | | Data visualization coding recommendations, visual model example construction | Displays properties suitable for visual encoding in a sorted list | 1.163 |
| Visual model building | Interactively perform data attribute and visual variable coding mapping, and adjust graphics parameters | Dynamically build graphics | Use drag-and-drop, association, etc. to build the model, and adjust the parameter meter to complete the detail adjustment | 1.874 |

mainly responsible for sending the user's operation request to the background system in the form of HTTP request and accepting the data information generated by the background system. Then, there is a need to build a visual display model effect in the front end and perform interactive operations with the user [9].

The gray box part of the flowchart is the part that the user can cycle through. In this process, the user continuously adjusts the visualization model, analyzes the effective information in the data, and realizes the abstract extraction of the core data information by gradually focusing on the data range.

The server-side data analysis system is an important basis for realizing the heuristic analysis method. The system will perform operations such as parsing, formatting, and data analysis on the original data and store the results of the operations and feed back the analysis results to the front end in an appropriate form. It can be seen that the functions of each module are cohesive, and there is information correlation, and some complex function modules can use the intermediate result information generated by other modules. Here, in the whole analysis process, each module calls each other through abstract business entities and transmits information. Figure 3 is a system frame diagram [10].
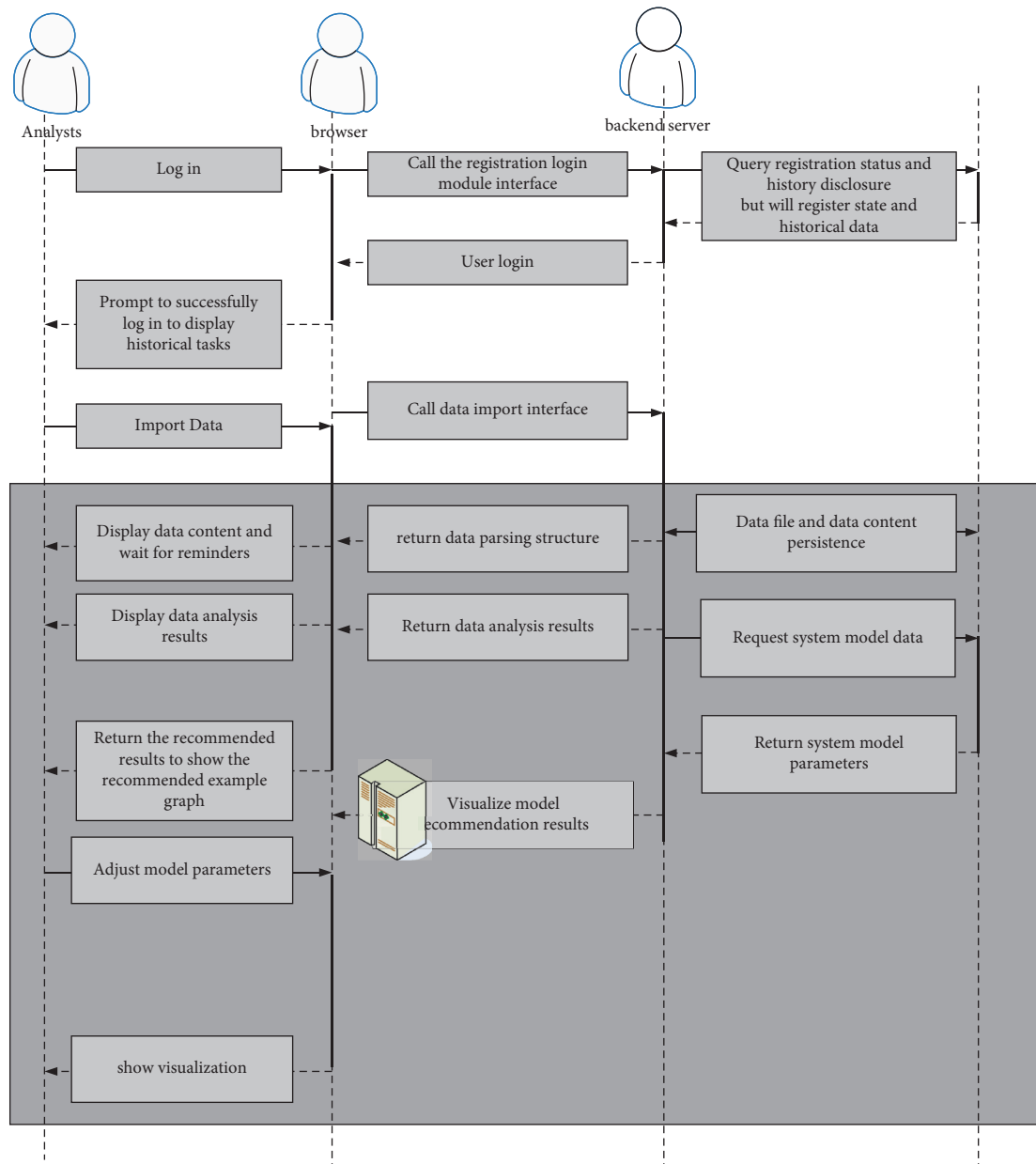
Figure 2: The main operation flow of the system.

In the front end, the Web-based visual model building function is the core module, and the data import module and the information display module together constitute the main part of the front-end system. The visualization model building module mainly integrates several visualization models that have been analyzed. It can be extended on this basis under the same calling interface framework. Figure 4 depicts the modular division of the front-end design of the system [11].

The process design of data parsing is shown in Figure 5, and each type of data file corresponds to a parser. All parsers implement the abstract parser interface, which ensures that the parsing control logic does not need to specifically analyze different types of files and only needs to call the parser factory method and parse the file by the specific parser. In the end, different types of parsers need to convert each piece of data information in the data file into unified JSON format data and finally return a JSON data list containing all data information for other functional modules to access the data information [12].

In the scenario of big data processing, massive data information often lacks sorting and cleaning, for example, a large amount of behavior and log information; although the amount of information is rich, it is difficult for analysts to understand. Generally speaking, it is necessary to integrate and extract a large amount of data, organize the original data into a secondary data table with certain significance, and then carry out visual analysis processing. This process first transforms the characteristics of the data attributes and reduces the amount of data that needs to be
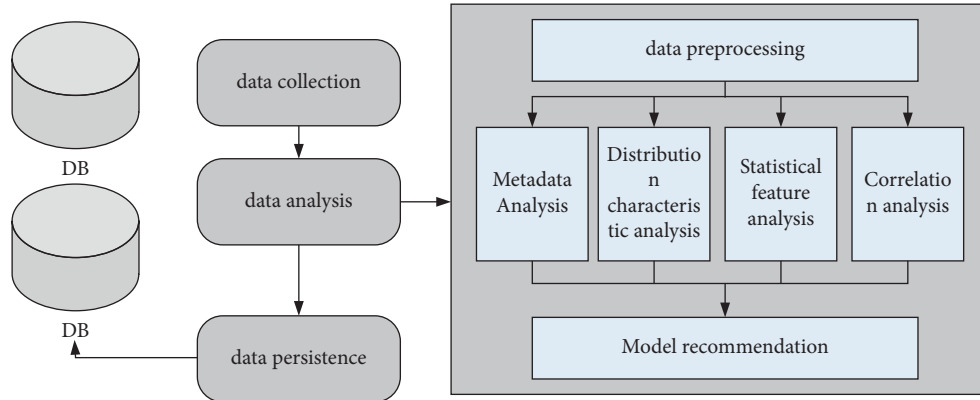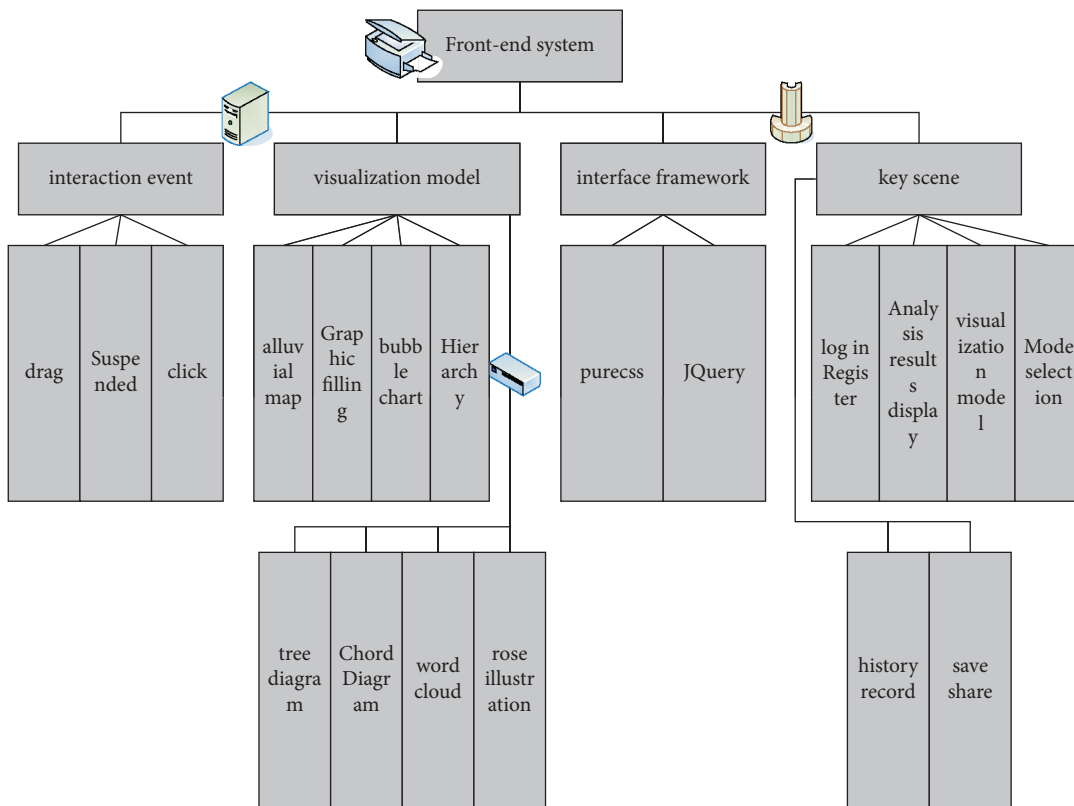
Figure 3: System frame diagram.



Figure 4: Front-end module division.

processed. In order to connect the process of processing primary data to secondary data, the system is designed to use a Hadoop-based data processing module to achieve the requirements. It realizes the ability to process such data information by reserving an interface for connecting with MapReduce to process data for analysts. Here, the distributed file system of Hadoop can be used to store the acquired massive data in HDFS, and it performs data processing through MapReduce according to the needs of data analysis and stores the results in HBase. Finally, the data to be analyzed is obtained by the system data acquisition and analysis module. The configuration of this environment mainly completes the process of installing Java virtual machine, configuring and installing Hadoop, and realizing the data import interface of system expansion. Its main data processing process is centered on MapReduce; the output results processed by MapReduce can be saved to HDFS files or output to HBase for storage, and after the final integration, the original data table before visual analysis is obtained. After the data is segmented on
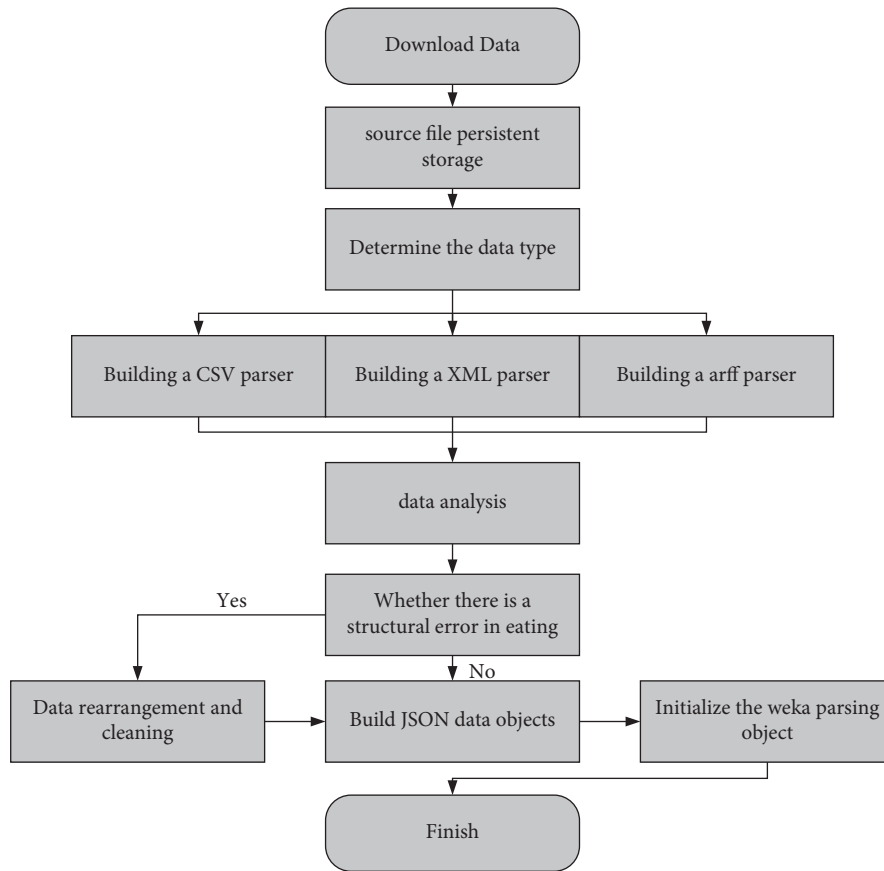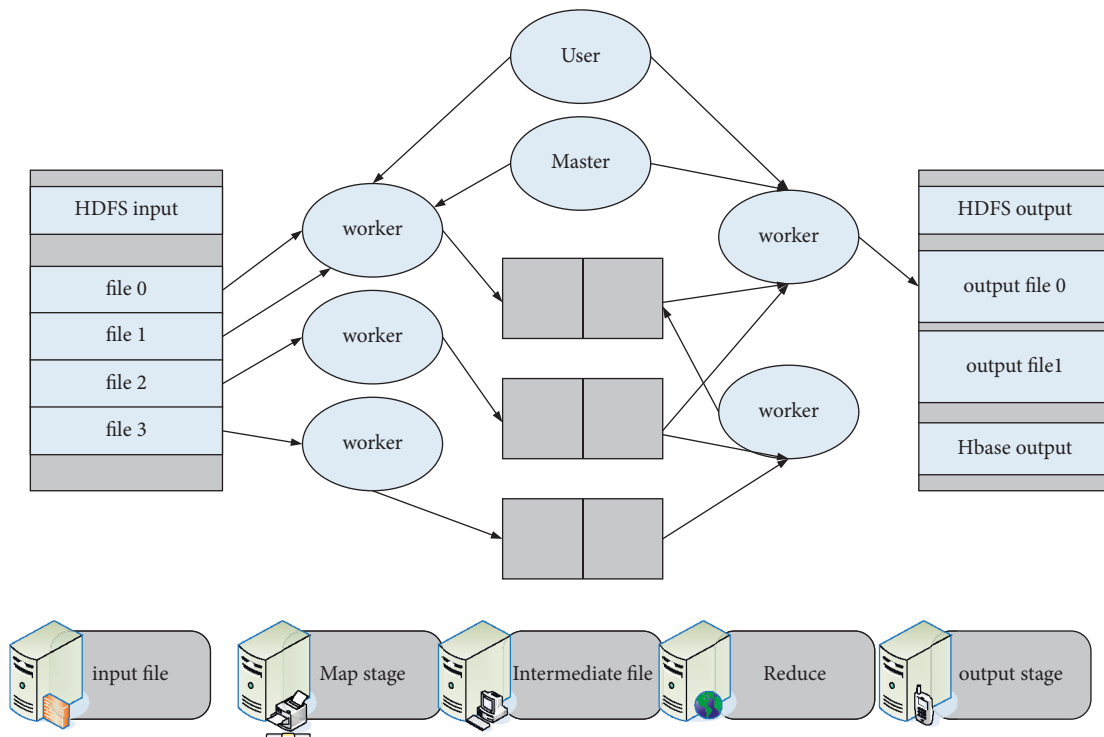
FIGURE 5: Data parsing flowchart.



FIGURE 6: Native data processing flowchart.

the basis of the core feature attributes, the subsequent related functions of the analysis system can be used for the practice of visual analysis. The general process of Map-Reduce can be shown in Figure 6 [13].

*Data Type Matching Degree.* The data type matching score consists of two parts: the type matching degree and the uniqueness degree of the attribute. The type matching degree scores are shown in Table 2. The degree of uniqueness of an attribute is used for comparisons between numeric attributes. In the case of mapping categorical visual variables, attributes with a low degree of uniqueness can show the classification characteristics of the data to a certain extent, so the score in this matching situation can be improved. At present, the system compares the unique ratio with the average ratio, and the higher percentage is added to the existing weight as a new weight [14].

Statistical characteristic analysis helps analysts to grasp the whole picture of the data and make in-depth reasoning and judgment according to it. The visual analysis process can use the combination of numerical calculation and image display to realize the study of statistical characteristics and distribution characteristics of data, which is its significant advantage. In order to reflect the centralization trend, separation trend, and distribution trend of statistical data, this part of the function will measure a number of statistical characteristics of the data and display the results of the measurement to the analysts in the form of a visual interactive report for processing. The judgment of data types is mentioned in the section of metadata analysis, and the statistical characteristics of different data types are not completely consistent. The main statistics used in the measurement are the mean, median, and mode of the data, as well as the weighted average of the data obtained by the analyst's self-adjustment of the weight. The following formulas are used to calculate the arithmetic mean and weighted mean, respectively [15].

$$\overline{x} = \frac{1}{n} \sum_{i=1}^{n} x_i,$$
$$\overline{x} = \frac{\sum_{i=1}^{n} w_i x_i}{\sum_{i=1}^{n} w_i}. \tag{1}$$

The general calculation formula of each calculation amount is as follows:

$$\sigma = \sqrt{\frac{1}{n} \sum_{i=1}^{n} (xi - \overline{x})^2},$$
$$Vx = \frac{\sigma x}{\overline{x}}. \tag{2}$$

The system not only calculates the skewness coefficient and kurtosis coefficient of the data, but also draws the intuitive distribution in combination with graphics. The formula used in the calculation is as follows:

$$SK = \frac{n \sum_{i=1}^{n} (x_i - \overline{x})^3}{(n-1)(n-2)\sigma^3},$$
$$K = \frac{n(n+1) \sum_{i=1}^{n} (x_i - \overline{x})^4 - 3\left(\sum_{i=1}^{n} (xi - \overline{x})^2\right)^2 (n-1)}{(n-1)(n-2)(n-3)\sigma^4}. \tag{3}$$

When exploring the relationship between data, it is often necessary to compare the similarity between the attributes of each dimension of the data. The higher the similarity, the higher the possibility of potential logical associations among them. Due to the different types of data attributes, the measurement methods for calculating the similarity between different categories of attributes are also different. The system mainly considers the processing of the relationship between the three types of data similarity: categorical attribute, numerical attribute, and ordinal attribute. The main characteristics of categorical attributes are the total amount of data, the number of categories, and the frequency of each category. In a set of high-dimensional data, there are generally many categorical attributes. The similarity of two data objects can be described by the Jaccard distance, and the calculation formula of its anisotropy is as follows [16]:

$$d(X, Y) = \frac{q}{q + p}. \tag{4}$$

The normalized value is

$$\frac{N_t - N_0}{N}. \tag{5}$$

The formula for calculating the Euclidean distance is

$$d(X, Y) = \sqrt{\sum_{i=1}^{n} (x_i - y_i)2}. \tag{6}$$

The correlation between numerical attributes can be expressed by calculating the correlation coefficient of random variables. The value range of the correlation coefficient is $[-1, 1]$; the value of the correlation coefficient reflects the degree of linear correlation between two attribute random variables and its basis is defined as

$$Pxy = \frac{Cov(X, Y)}{\sqrt{D(X)}\sqrt{D(Y)}}. \tag{7}$$

Representing the evolutionary pattern of the entire sequence:

$$h_{enc} = \text{encoder}(X). \tag{8}$$

We feed $z$ into each layer of the RNN to estimate the probability distribution of the occurrence of events on the corresponding time slice. Its process is defined as follows:

$$X' = \text{decoder}(z). \tag{9}$$

This optimization objective can be defined as minimizing the following loss function:

TABLE 2: Type matching score table.

| | | Property type | | |
| --- | --- | --- | --- | --- |
| | | Numerical | Ordinal | Category type |
| But the variable type | Numerical | 1 | 0.5 | 0.3 |
| | Ordinal | 0.6 | 1 | 0.2 |
| | Category type | 0.4 | 0.8 | 1 |

$$L = L_r + w_{kl} \cdot L_{kl},$$

$$L_r = -\frac{1}{n} \sum_{i=1}^{n} \sum_{j=1}^{|E|} \left( w_{ej} x_{ij} \log(x'_{ij}) + (1 - x_{ij}) \log(1 - x'_{ij}) \right),$$

$$L_{kl} = -\frac{1}{M_z} \sum_{i=1}^{M_z} \left( 1 + \log(\sigma_i^2) - \mu_i^2 - \sigma_i^2 \right).$$

(10)

After the model training is completed, using the learned latent feature vector $z$ of each sequence to detect abnormal sequences ($R2$) in the dataset and using the local divergence factor of the vector in the feature space to evaluate the anomaly degree of each sequence, which is defined as follows:

$$LOF(z) = \frac{\sum_{y \in N_k(z)} D_k(y)}{|N_k(z)| D_k(z)},$$

$$D_k(z) = \frac{|N_k(z)|}{\sum_{y \in N_k(z)} ((d_k(y), d(z, y)))}.$$

(11)

On this basis, calculating the outliers for each event at each time node

$$\text{anomaly}(x^{\text{mis}}) = \Pr(X = x^{\text{mis}}),$$

$$\text{anomaly}(x^{\text{red}}) = 1 - \Pr(X = x^{\text{red}}),$$

$$\text{dec} = t \frac{i - n}{i + n} + (1 - t) \frac{j - n}{j + n}.$$

(12)

## 4. Audience Analysis of Brand Communication Data under Computer Vision Communication Takes D City as an Example

Through the analysis of the current situation and existing problems of the brand integration of "cold black soil" agricultural products, it can be seen that there are many agricultural products with "cold black soil" as the trademark or promotion point. The brand goal of "ground black soil" is really and effectively brought into place. Eliminate fake and shoddy products in the market, expand the competitive advantage of the brand in the market, enhance the market recognition of black soil resources in cold regions, improve the market influence and occupancy of the brand, and make the brand integration effect truly manifest. It is the basis for the concept of "cold land black soil" agricultural product brand integration to clarify the various relevant factors that affect the integration of agricultural products brands. Therefore, this chapter uses mathematical models to analyze the mastered brands quantitatively and qualitatively. The factors of integration effect are decomposed, evaluated, and analyzed layer by layer, which provides decision-making reference for the actual integration direction of relevant enterprises and managers and provides quantitative basis for putting forward the concept of "cold land black soil" agricultural product brand integration and the countermeasures and suggestions for improving the integration of agricultural product brands, as shown in Figure 7.

The main body of integration is the main operator of the "cold land black soil" agricultural product brand operation and the main executor of brand integration. The main body of brand integration needs to accurately grasp the different needs of consumers under the condition of clear and objective analysis of the market environment. The procedure conforms to the standardization regulations, supervises the quality of agricultural products in the process of processing, expands the sales network of agricultural products in the sales process, and actively promotes the brand, leading the whole process of brand integration. At present, in the process of brand integration of "Handi Heitu," the Handi Heitu Property Group, as the only operating entity, is obviously not enough to control the promotion of the entire brand integration in terms of scale and resource acquisition. Therefore, diversification is required. The main body of integration has become an important prerequisite for brand integration, and from the perspective of domestic and foreign experience and the status quo of brand integration, those agricultural production enterprises, processing enterprises, and marketing enterprises with advanced agricultural production technology, strong capital turnover capacity, and modern management concepts or comprehensive farmers' professional cooperatives are more suitable main body of brand integration. Develop and expand agricultural leading enterprises, improve their processing and production capacity with modern management methods, establish agricultural associations, build bases, leading enterprises, comprehensive cooperatives, and other multi-integrated agricultural product brands, and promote the main business projects and brands. In the cross-regional development of the whole province or even the whole country, the diversified integration main body can digest internally, cooperate internally, and cooperate in the division of labor in terms of production, processing, storage and transportation, and sales. The integration of various factors, integrated management of relevant links, and jointly promote the development of the "cold black soil" agricultural product brand integration. Figure 8 and Table 3 are the output of various agricultural products.
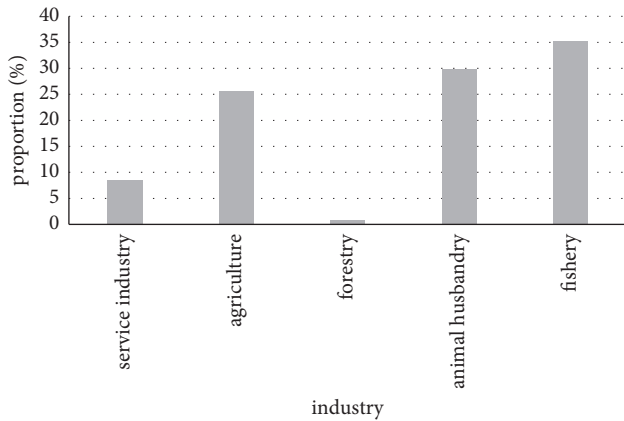
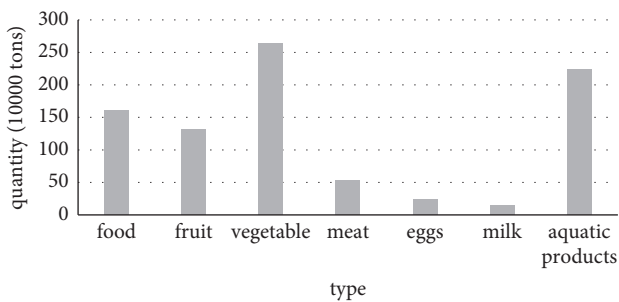FIGURE 7: Distribution of the share of agricultural output.



FIGURE 8: Output of various agricultural products in city D.

TABLE 3: Production of agricultural products in some districts and counties in city D.

| District name | Types of agricultural products produced | Quantity |
|---|---|---|
| Zone J | Fruit big cherry, yellow peach, vegetable, flower, sea cucumber | 12.5 |
| Zone G | Seafood prawns, scallops, abalone, etc., fruit apples, large cherries, yellow peaches, etc., meat | 21.6 |
| Zone L | Vegetables, flowers, fruits, cherries, pears, etc., seafood, fish, shrimp, shellfish, sea urchins, algae, etc. | 52.3 |
| City W | Fruits, apples, cherries, grapes, livestock and poultry, cattle, sheep, broilers, aquatic products, sea salt, fish and shrimp, sea cucumbers, shellfish | 24.6 |
| City P | Grain, fruits, apples, cherries, grasses, vegetables, livestock broilers, beef cattle | 23.1 |
| City Z | Livestock, poultry, chicken, pig, cattle, sheep, fruit, apple, strawberry, grape, kiwi, etc., vegetables, aquatic products, fish, shrimp, crab, shellfish | 36.5 |
| County C | Mainly seafood, such as shellfish, fish, shrimp, crab, algae and shellfish, especially rich in sea cucumber and abalone | 51.7 |

In the market environment where food safety has become a hot topic in the world, the quality and safety of agricultural products has become the focus of consumers' attention. All the global production enterprises strictly put quality supervision in the first place in the production process and use standardized procedures to control the quality of the production process. As analyzed above, the United States and France have adopted very strict quality control systems and have also legally made strict regulations on the production process of agricultural products, carried out quality certification of agricultural products, and standardized the management of brand logos, while Japan is relatively more, it is very strict, from quality certification to origin traceability. Combined with the development status of agricultural product brands in "cold land and black soil," and learning from foreign experience, in the integration and development of agricultural product brands, we should pay more attention to using standardized procedures to create standardized production so as to ensure and gradually improve the quality of agricultural products. From the government's point of view, it is necessary to establish a unified national certification standard, regulate and supervise relevant certification agencies, enrich the types of certification standards, improve the quality assurance of "cold land black soil" agricultural products, and gradually integrate with the international certification system; from the perspective of the enterprise, establish its own standard procedures and provide corresponding quality inspection reports for each batch of agricultural products entering the supermarket so as to truly realize the quality control in all aspects of production, processing and sales, and form its own quality certification standards for black soil.

The "three-product certification" of agricultural products has developed rapidly. The so-called "three products" refer to pollution-free food, green food, and organic food. The certification standard of "three products" is to ensure the quality and safety of agricultural products and promote the standardized production of agricultural products. Among them, pollution-free products and green food are the foundation, and organic food is the highest. Level of certification. According to statistics from the Green Food Development Center, as of April 2018, a total of 506 agricultural products have been certified by the Agricultural Products Quality and Safety Center of the Ministry of Agriculture, the China Green Food Development Center and the China Green Huaxia Organic Food Certification Center. The total number of enterprises is 217. Table 4 shows the certification of "three products" of agricultural products.

SWOT is an analysis method of marketing, which is mainly used to analyze the company's own competitive advantages, disadvantages, opportunities, and threats so as to formulate the development strategy of the company and promote the better development of the company. The article uses SWOT to analyze the advantages, disadvantages, opportunities, and threats of cold land black soil agricultural products so as to "prescribe the right medicine" in the process of brand building and dissemination, promote strengths and avoid weaknesses, and enhance the overall image of agricultural products brands. Figure 9 shows the SWOT analysis of agricultural products.

TABLE 4: "Three-grade" certification of agricultural products in city D.

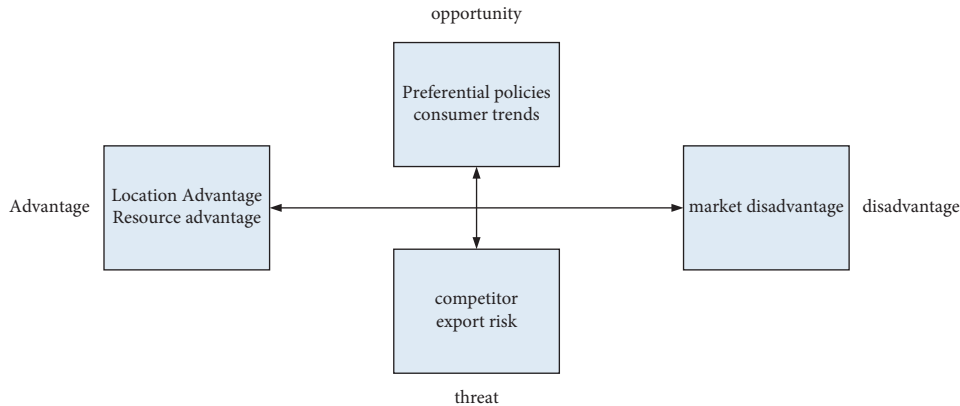| Type of certification | Number of certified agricultural products | Number of certified companies |
| --- | --- | --- |
| Pollution-free food | 210 | 130 |
| Green food | 251 | 72 |
| Organic food | 45 | 15 |
| Total | 506 | 217 |



FIGURE 9: SWOT analysis of agricultural products in city D.

Integrated marketing is the key to the development of brand integration. In the final analysis, brand integration is the continuous change of marketing methods. It is easy to launch from the integrated marketing of many agricultural product brands in France and the United States. The diversification of marketing strategies can effectively improve the competitiveness of brands in the market. For example, the Japanese brand "Hakata Universal Onion" invites advertising companies to design a marketing strategy for a specific market on the premise of market promotion and create a brand name for a specific market, from production to sales. The company is tailor-made. In addition, the promotion of French wine tasting culture is a good way to promote French culture to the world. In the development of the "cold black soil" agricultural product brand, the advertising investment, especially the advertising investment of TV media, is relatively small, and the special "cold black soil" agricultural products advertisements that people can see on TV are mostly concentrated in small areas. However, there are very few agricultural products advertisements that can actually be broadcast on various satellite channels. On the one hand, "cold land and black soil" agricultural product operating enterprises should increase their advertising and publicity and plan or carry out a series of market promotion activities to improve the popularity of regional agricultural product brands and market awareness of the brand. The company should be more involved in the promotion of agricultural products, make full use of various resource platforms, and use diversified media methods as the basis to promote the brand image of regional agricultural products for all-round shaping and publicity so as to improve brand market awareness, as shown in Table 5.

TABLE 5: Brand name industry distribution.

| Category of the brand | Number | Name example |
| --- | --- | --- |
| Aquatic products | 14 | Zhangzidao, Haiyantang, Xiaoqin |
| Fruit | 42 | Mountain climbing, golden state red, hump |
| Vegetable | 12 | Lvchen, Fuqiao, Jinke |
| Animal husbandry | 6 | One hundred years of Phoenix, Xue Long, Chu Ming |
| Dairy industry | 5 | Jiuyang, Sanhuan, Xiaoniu Pavilion |
| Eggs | 5 | Cuckoo, Hong family, Hei Dao |
| Rice industry | 8 | Uncle Mi, Hongguo |
| Other | 8 | Lingjing, Huibao, Maihua |
| Total | 100 | |

In the process of integrating foreign agricultural product brands, leading enterprises, professional cooperative organizations, and relevant government agencies have played an active role in supporting and promoting the large-scale development of brands. From abroad, Japan has used the power of the agricultural association in the development of brand integration, forming a multisubject brand integration body and improving the degree of organization. The French government also actively provides financial support and promotion support for agricultural product brand integration. Therefore, in the integrated development of "cold black soil" agricultural product brands, the government should regard the integration of "cold black soil" agricultural product brands as a global strategy, formulate a complete brand support system, and provide financial subsidies and
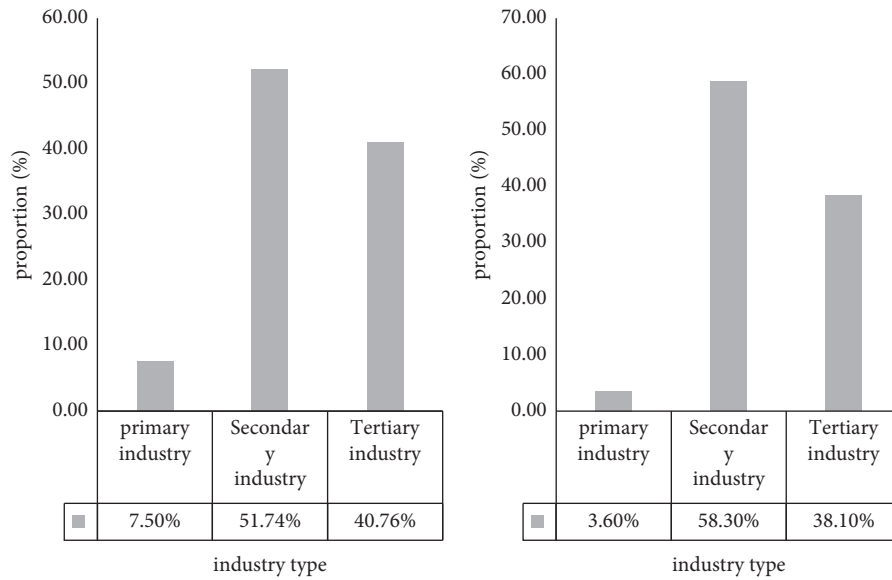
FIGURE 10: The composition ratio of the three industries in city D and the contribution rate of the three industries to the economic growth of city D.

infrastructure improvements required for brand certification. Strengthen the guidance and support to the regional brand, set up the correct brand concept, excavate the cultural connotation of the regional brand, and strengthen the cooperation between leading enterprises, cooperative institutions, and governments. Leading enterprises should continuously optimize their own resources and drive the coordinated development of various resource entities with modern organizational development so as to adapt to the changing market competition environment and farmers' cooperative organizations. It is necessary to continue to integrate scattered small households, take the interests of farmers as the fundamental starting point, and exert collective strength in brand promotion and other aspects. The contribution rate of agriculture to economic growth is only 3.6%, less than 1/16 of the secondary industry and 1/10 of the tertiary industry, as shown in Figure 10.

The brand of agricultural products is one of the national strategies to participate in the global agricultural competition, and now every modern agricultural country treats brand agriculture as a national strategy. Through the analysis of the relevant experience of the United States, Japan, and France in the integration of agricultural product brands, this chapter summarizes some experiences that can be used for reference in the integration and development of agricultural product brands in "cold land and black soil": first, strengthen the control of the standard system and formulate standardized brands, certification system, and quality management system; secondly, expand media marketing channels, strengthen brand innovation and publicity protection; lastly, increase government policy support and improve the social service system.

## 5. Discussion

Through the qualitative analysis of the current situation, existing problems, and the quantitative analysis of many factors affecting the integration effect of "cold black soil" agricultural product brand integration, this chapter's conception of the "cold black soil" agricultural product brand integration mainly starts from the following aspects: (1) Accurately grasp the principle of brand integration of "Cold Land and Black Earth," adhere to the principles of market orientation, unified quality standards, resource utilization, and protection, and strictly follow these principles to grasp each link and each influencing factor. The goal of brand integration of "Black Earth," all integration methods and methods are based on the ultimate goal; (2) the concept of brand integration of "Cold Earth Black Earth" mainly includes three aspects: the integration of production and processing, the integration of brand management, and the integration of product sales. From a theoretical point of view, it provides a method that can improve the brand integration effect and market competitiveness of "cold black soil" agricultural products.

Mobile TV includes city bus TV, train TV, passenger transport, and TV on the plane. Urban bus routes are fixed, so the audience of bus TV is relatively fixed, which is conducive to the continuous dissemination of brand information. People take the same bus every day and see the same advertisement, and they will naturally remember it. China's railways transport hundreds of millions of passengers every year, and these passengers come from all over the country, so the scope of information dissemination is very wide. When people take trains, especially long-distance

trains, they often feel bored. Train TV provides them with an opportunity to relax so that people no longer have to do nothing during the long journey, so people's attention resources are more concentrated at this time, and the dissemination effect will be very good. Brand owners can choose trains covered by train TVs to promote agricultural products in trains or other trains between city D and other cities. It is also possible to directly put the special agricultural products of D city on the train for sale so that people can actually taste it, because food is a must for every passenger on the way, and agricultural products with food as the main form of expression are useful at this time. In addition, televisions on long-distance buses and planes can also be used as a position for brand promotion of agricultural products. LCD TV advertisements in buildings and supermarkets are outdoor advertisements.

Building TV fills the waiting time of office workers and makes waiting no longer boring. The audience of building TV is mainly urban white-collar workers. They pay more attention to the quality of life and have higher requirements on diet. Therefore, video advertisements on building TV have strong pertinence. Supermarkets are important sales terminals for agricultural products. The audience of supermarket videos are consumers who are shopping, many of whom are housewives who prepare meals for the whole family. Video advertisements in supermarkets can play a role as a shopping guide and may even directly arouse consumers' attention. The desire to buy motivates them to implement the buying behavior. The outdoor screen is huge, the picture is clear, the color is bright, and the expression is vivid; it is easy to attract people's attention, and the location is generally located in the more prosperous business district in the center of the city; the flow of people is large, so the contact rate and arrival rate are high, and the dissemination effect is good. In fact, no matter it is interpersonal communication, mass communication, or new media communication, any kind of communication method is not enough to have a decisive influence on the brand, and not all brands are suitable for these communication methods. Therefore, when choosing the communication method of agricultural products brand, one or several communication methods should be determined according to product characteristics, target positioning, promotion budget, and so on so as to maximize the role of brand communication.

## 6. Conclusion

The significance of exploring the consumer psychology of brand audiences is to guide people to pay attention to brand audiences from the perspective of consumer psychology and to establish, maintain, and develop the relationship between brands and audiences through activities or efforts. This includes internal and external audiences and ensures value through long-term interactions, exchanges, and communication, fulfills these commitments, and continues to develop trust, dependence, satisfaction, and commitment to this good brand-audience relationship. Only by aiming at the emotional needs of consumers can the audience finally have a desire and appreciation for the brand. The formation of the

audience's positive emotions can prompt the audience to maintain a long-term stable relationship with the company in order to pursue this good emotional state again. The homogenization and supercompetition of products in the market are becoming more and more common, and the traditional marketing strategies to enhance the competitive advantage are more and more powerless. Whether for internal or external audiences, brands should endow the audience with an emotional commitment so that the audience can establish a deep, lasting, and intimate emotional connection with the brand. This principle applies to all audiences. But a major limitation of the article is the complexity of the research object itself. Audiences are complex and elusive, although behavioral decisions rest with the audiences themselves due to the involvement of a variety of peripheral factors when participating in communication activities, and when these influences act on the audience, there will be differentiated changes again, and the prediction and summary of the rules are not necessarily all-in-one. Therefore, the article is limited to the analysis of the scope and typical manifestations of the brand audience's active behavior. Brands such as agricultural product enterprises, agricultural associations, farmers, and the government are mainly taking active actions to design scientifically, plan rationally, and comprehensively use a variety of methods to carry out brand communication and promotion activities on the basis of in-depth understanding of products so as to create more internationally renowned agricultural product brands.

## Data Availability

No data were used to support this study.

## Conflicts of Interest

The authors declare that there are no conflicts of interest regarding the publication of this article.

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