

## *Retraction*

# **Retracted: Micromedia News Dissemination Impact Assessment Integrated with Personalized Recommendation Algorithm**

### **Advances in Multimedia**

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This article has been retracted by Hindawi following an investigation undertaken by the publisher [1]. This investigation has uncovered evidence of one or more of the following indicators of systematic manipulation of the publication process:

- (1) Discrepancies in scope
- (2) Discrepancies in the description of the research reported
- (3) Discrepancies between the availability of data and the research described
- (4) Inappropriate citations
- (5) Incoherent, meaningless and/or irrelevant content included in the article
- (6) Peer-review manipulation

The presence of these indicators undermines our confidence in the integrity of the article's content and we cannot, therefore, vouch for its reliability. Please note that this notice is intended solely to alert readers that the content of this article is unreliable. We have not investigated whether authors were aware of or involved in the systematic manipulation of the publication process.

Wiley and Hindawi regrets that the usual quality checks did not identify these issues before publication and have since put additional measures in place to safeguard research integrity.

We wish to credit our own Research Integrity and Research Publishing teams and anonymous and named external researchers and research integrity experts for contributing to this investigation.

The corresponding author, as the representative of all authors, has been given the opportunity to register their

agreement or disagreement to this retraction. We have kept a record of any response received.

### **References**

- [1] S. Guo, "Micromedia News Dissemination Impact Assessment Integrated with Personalized Recommendation Algorithm," *Advances in Multimedia*, vol. 2021, Article ID 5621864, 11 pages, 2021.

## Research Article

# Micromedia News Dissemination Impact Assessment Integrated with Personalized Recommendation Algorithm

Shaofang Guo 

Anhui University of Science and Technology, College of Humanities and Social Sciences, Huainan 232000, China

Correspondence should be addressed to Shaofang Guo; [sfguo@aust.edu.cn](mailto:sfguo@aust.edu.cn)

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The development of the Internet has completely changed the way of recommending and disseminating news content. Traditional media forms of news dissemination effectiveness evaluation methods are no longer fully suitable for the evolving needs of new media news dissemination. Therefore, it is necessary to innovate methods for evaluating the effects of new media news dissemination. This article mainly combines personalized recommendation algorithms to evaluate the effectiveness of news dissemination. Currently, popular personalized recommendation algorithms include content-based recommendation algorithms, collaborative filtering recommendation algorithms, knowledge-based recommendation algorithms, and associated recommendation algorithms. These recommendation algorithms are effective. This promotes the dissemination of news, which also recommends news content that is more relevant to user preferences for most users. In addition, the quality of news content is further evaluated through the news rating system, thereby effectively improving the quality of news content.

## 1. Introduction

MNews has the function of transmitting various information and guiding public opinion, so news occupies an important position in people's lives. With the development of information technology, news dissemination channels have gradually changed from traditional media such as newspapers, radio, and television to websites, mobile phones, and the Internet. In the context of the Internet, the speed and quantity of news disseminated by online media are very fast, which makes the news dissemination industry develop very rapidly. Due to the wide range of news audiences and high popularity, the evaluation of the dissemination effect of online news involves multiple indicators, which requires the establishment of a relatively complete rating system. The audience of online news is mainly netizens and other media, so this article mainly starts with the behaviors of netizens and media and then tries to establish an evaluation model of the effect of online news dissemination.

## 2. Characteristics and Development Status of Micromedia

Micromedia is a product of the Internet era. Therefore, the main characteristics of micromedia are the miniaturization of news content, the miniaturization of news sources, and the miniaturization of news dissemination paths.

Miniaturization of news content: the so-called news refers to the latest or recent events. Therefore, the amount and location of news are very large. The traditional way of collecting and publishing news is mainly to manually collect and edit news and publish news. Such news content has certain limitations. In the Internet era, people can learn everything they want to know through the Internet, and the Internet breaks through time, space, and location. As people learn about the latest news, they can also communicate online 24 hours a day, and they can also express their opinions on the latest events [1, 2].

Miniaturization of news origin: through the Internet and smart terminals, people can break through time, space, and place for online communication, which means that everyone can be a news collector, publisher, and disseminator. The sources of news under the traditional model are mainly news organizations, including television stations, newspapers, and magazines. This kind of offline transmission has fewer channels, slow transmission speed, and poor transmission effect. Therefore, relevant departments can only strictly censor news content, and only events that are sufficiently important can be edited, reviewed, and published. However, the quality of news content under the traditional communication mode is very good, and it has a positive effect on the development of society. The spread of news under micro-media is very fast, but the source of news dissemination and the quality of news content contain uncertainty. This has brought confusion to the audience's cognition, and it has also greatly increased the difficulty of news impact assessment.

Miniaturization of news dissemination path: the Internet is everywhere. The individuals, groups, and communities who use the Internet are also different, and this makes the way of news dissemination blurred. People usually use platforms such as Weibo and WeChat to publish and disseminate news [3]. People participating in the discussion of news content are different, including their identity, background, and life experience, which make them have different understandings and perceptions of the same news content, and then these people forward the news through their own understanding. Through the network relationship between individuals, news continues to spread and evolve. Eventually, the contradictory points in the news will resonate among the corresponding people and reach the peak of their influence. The dissemination of some news will only leave after dinner, while some will have a specific impact on the characters in the real world.

The process of news dissemination in the micromedia environment can be simply described as the disseminator-the information-the receiver. But in this process of dissemination, there will be interactions between communicators [4]. The process of news dissemination is shown in Figure 1.

*2.1. Reasons for the Rise of Computer-Based Personalized Recommendation Algorithms.* With the development of the Internet era, people's demand for the Internet is getting higher and higher. In addition, unlimited network information and network communication technology are the reasons for the generation and popularity of personalized recommendation algorithms.

First, the amount of Internet information and unlimited growth are important reasons and backgrounds for the rise of personalized algorithms. According to statistics, the amount of data generated by the Internet in one day at the end of 2014 was about 800 EB. By 2015, the information uploaded within one second on the Internet will take five years for a person to read it. Nowadays, the development of the Internet is even faster, so information data are showing

a trend of unlimited growth under the background of the Internet era [5]. However, under this trend, the authenticity of network information is extremely unclear, so relevant personnel need people to verify the source of the information and analyze the authenticity of the information content. Because users do not have this kind of professional ability, algorithm news that can quickly obtain information and distribute in real time will emerge as time requires.

Second, technological development is the basis of individuality for technological development. From the traditional manual collection of information, manual editing and printing, offline publishing to the current data mining technology, mobile phone information, electronic editing, and online publishing, it all shows that the information dissemination of human society is closely related to the progress of media technology. This has also promoted the formation of personalized technology [6, 7].

Third, with the development of the Internet and its application in enterprises in various fields, a large number of users have provided huge amount of data and information for various new media companies. These data have also attracted the attention of a large number of advertisers, and accurate search algorithms and personalized recommendations can make it easier for advertisers to benefit. Commercial companies have also continuously improved their algorithms to attract the attention of advertisers, and commercial interest companies have directly accelerated the development of personalized recommendations.

Fourth, user needs are the most important factor in the development of personalized recommendation algorithms. The essence of news dissemination is to serve users. Therefore, it is the most important service for news companies to recommend news personalized for users based on the characteristics of users [8].

*2.2. Personalized Recommendation Algorithm.* At present, most systems have data mining functions and personalized recommendation functions, so that the system can mine user preferences and characteristics, and the system can make personalized recommendations according to user needs. Intelligent recommendations can not only strengthen the spread of news but also greatly reduce the search time for users. It can be seen that data mining function and personalized recommendation function are indispensable parts of the news recommendation system. The system uses data mining technology to learn about the user's relevant information and builds an object model. Finally, a recommendation algorithm is performed to provide users with customized recommendations based on the recommendation strategy, user information, and object information [9]. The model process of the specific recommendation algorithm is shown in Figure 2, and the advantages and disadvantages of commonly used recommendation algorithms are shown in Table 1.

At present, the four most popular recommendation algorithms are content-based recommendation algorithm, collaborative filtering recommendation algorithm,

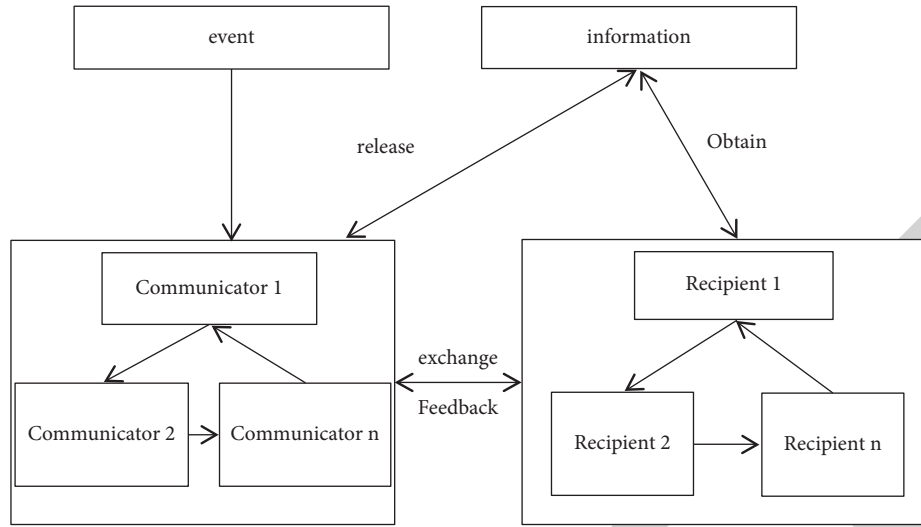


FIGURE 1: News dissemination process.

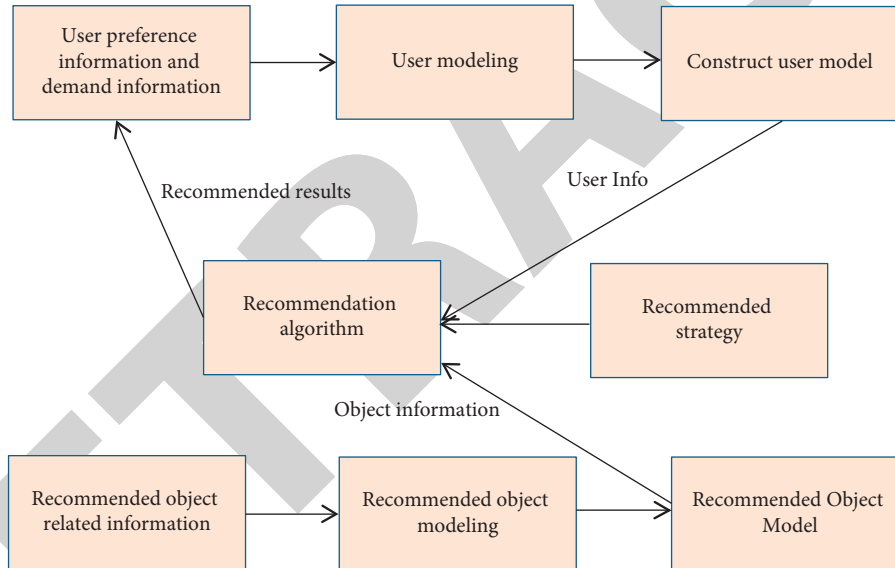


FIGURE 2: Model flow of the recommendation algorithm.

knowledge-based recommendation algorithm, and hybrid recommendation algorithm [10].

- (1) Content-based recommendation algorithm: the content recommendation algorithm is also called content-based information filtering recommendation, which does not require users to evaluate the recommended objects. It extracts the content characteristics of the recommended object and then learns the user's preferences and interest from the content of the object selected by the user in the past. Finally, it

will recommend objects that match the user's preferences and interest. The effective function formula of the content-based recommendation algorithm is

$$f(u, c) = \text{score}(\text{ContentBasedProfile}(u), \text{Content}(c)). \tag{1}$$

Among them, the score function can be calculated by the cosine similarity of the two functions and finally recommended according to the value of  $f$ , as follows.

TABLE 1: The advantages and disadvantages of commonly used recommendation algorithms.

Recommended algorithm classification	Representative algorithm	Main advantage	Main disadvantage
Content-based recommendations	Text recommendation method	(1) It can handle the cold start problem of new projects (2) Solve the problem of sparse scoring (3) Be able to make recommendations for users with special interest (4) Can recommend new products and nonpopular products (5) The reason for the recommendation can be explained intuitively	(1) Unstructured data cannot be effectively processed (2) Lack of potential mining capabilities for users (3) There is a cold start problem when a new user appears (4) Poor self-learning ability
Memory-based collaborative recommendation	(1) Recommendations based on neighbors (2) Based on user/project Top-N recommendation	(1) Suitable for processing complex unstructured data (2) Effectively discover projects with high novelty (3) Recommended explanations can be provided	(1) There is a cold start problem (2) When the data scale expands and the data sparseness is severe, the quality and efficiency of the recommendation will decrease (3) Rely on historical behavior data
Model-based collaborative recommendation	(1) Bayesian network (2) Clustering ( $k$ -means, neural network) (3) Dimensionality reduction technology (SVD, LDA, pISA, PCA, etc.) (4) Graphical model	(1) Effectively alleviate the problem of data sparsity (2) Enhance the scalability of the system (3) Improved prediction accuracy	(1) The modeling is complex and needs to be updated periodically (2) Dimensionality reduction will cause some information loss, and it is difficult to provide recommended explanations
Knowledge-based recommendation	(1) Recommendation based on constraints (2) Recommendations based on examples (3) Recommendation based on knowledge reasoning	(1) Do not rely on the user's historical behavior data (2) Solve the cold start problem	(1) The quality of recommendation depends on knowledge acquisition and quality (2) Recommendations are static
Hybrid collaborative filtering	(1) Content-based hybrid collaborative filtering (2) Memory-based and model-based hybrid collaborative filtering	(1) Mixed recommendations can learn from each other's strengths (2) Use content analysis to deal with new projects or new user issues	(1) Method selection and combination sequence (2) The weight distribution of the results obtained by different methods

$$f(u, c) = \cos(w_u, w_c) = \frac{\sum_{i=1}^k w_{i,u} w_{i,c}}{\left(\sqrt{\sum_{i=1}^k w_{i,u}^2} \sqrt{\sum_{i=1}^k w_{i,c}^2}\right)} \quad (2)$$

(2) Collaborative filtering recommendation algorithm: the algorithm mainly recommends the use of user content, that is, it uses user historical data to make predictions and then it makes recommendations based on the prediction results or makes predictions based on historical preferences, ratings of neighboring users, and evaluation of target users. In the user-based model, the similarity between users can be calculated by choosing different similarity functions, as follows:

$$\text{sim}(u, v) = \frac{\sum_{i \in I_u \cap I_v} (r_{ui} - \bar{r}_u)(r_{vi} - \bar{r}_v)}{\sqrt{\sum_{i \in I_u \cap I_v} (r_{ui} - \bar{r}_u)^2} \sqrt{\sum_{i \in I_u \cap I_v} (r_{vi} - \bar{r}_v)^2}} \quad (3)$$

Among them,  $I_u$  and  $I_v$  are the set of items reviewed by user  $u$  and user  $v$ ,  $r_{ui}$  represent the actual ratings of user  $u$  on item  $i$ , and  $\bar{r}_u$  and  $\bar{r}_v$  are the average ratings of user  $u$  and user  $v$ , respectively; then, use the common score between users to measure their similarity.

The model-based collaborative recommendation algorithm mainly uses the user's rating of the item to construct a rating prediction model. Among them, a variety of machine learning and data mining

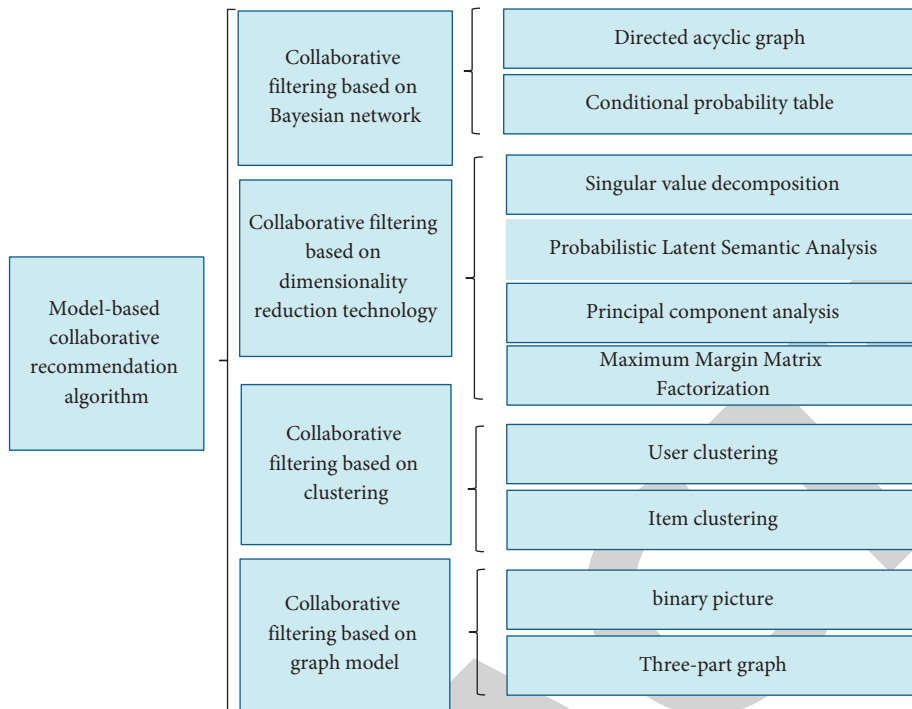


FIGURE 3: Commonly used models and content.

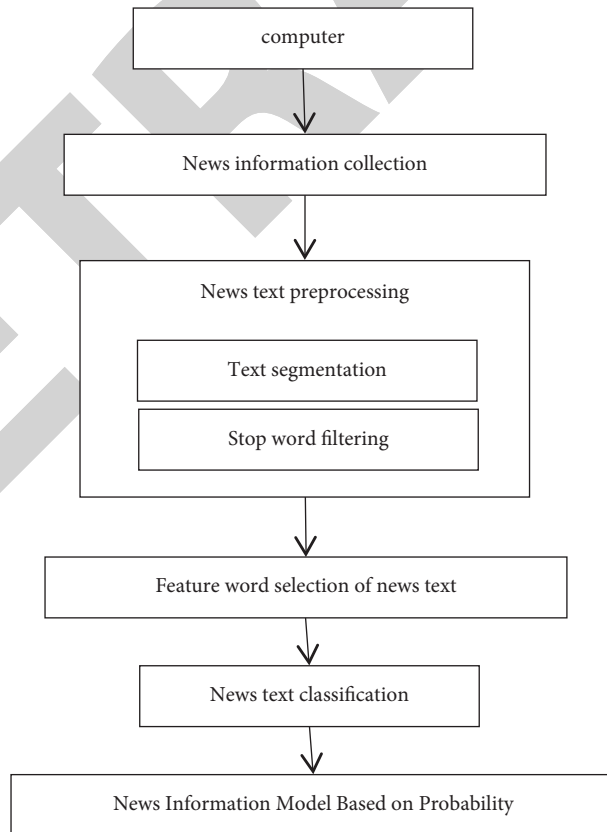


FIGURE 4: News information modeling steps.

calculation models are used, and then the prediction of unknown scores is realized through this model. The contents of commonly used models are mainly shown in Figure 3.

- (3) Knowledge-based recommendation algorithm: the method can be divided into three categories: constraint-based recommendation, case-based recommendation, and knowledge-based reasoning recommendation system.
- (4) Mixed recommendation: combination recommendation is a combination of multiple recommendation algorithms. Ideally, a combination of different recommendation algorithms can be used to gain benefits while maintaining advantages and avoiding disadvantages. In terms of combination methods, there are mainly 7 combination ideas: weighted fusion, switching, mixing, feature combination, cascade, feature expansion, and meta-level mixing. These 7 ideas are divided into 3 basic design methods: integral type, pipeline type, and parallel type [11].

At present, there are many combination methods in theory, but different combination ideas are suitable for different application scenarios. According to the stage of the recommendation algorithm combination and the degree of fusion, the combination recommendation can be divided into front fusion, middle fusion, and postfusion. Commonly used mixed recommendations are as follows: (1) combine recommendations based on the results of collaborative recommendation and separate operation based on content recommendation; (2) integrate the features of content-based recommendation into a certain collaborative recommendation; (3) establish a prediction model with the characteristics of content-based recommendation and collaborative recommendation.

*2.3. The Status of Personalized News Feeds.* At present, the client webpages of news algorithm aggregation systems are mainly headlines and consultations. With the development of the times and education, people pay more and more attention to the improvement of the overall level of national culture. Therefore, reading has become one of the daily lives of modern people. With the development and popularization of the Internet, more and more users like to read news information. And, the Internet allows people to grasp the latest news from all over the world at any time [12].

After the emergence of Big Data Web 2.0, the news information system has already presented a preliminary personalized recommendation function, which can effectively save users more time, and users can learn about information from all over the world without leaving home. Traditional news media has brought various limitations to people, and the advent of the Internet era has completely broken these limitations. In this era of data explosion, news apps based on leading engine technology and accurate and personalized recommendations quickly

occupy the market. The emergence of mobile smart mobile clients has brought greater gospel to the development of these software apps. At the same time, this has laid a solid foundation for the growth of mobile users [13]. With the popularity of mobile phones in people's lives, mobile phones have become the best channel for us to spread and obtain information. Users can download various news information apps on their mobile phones, and they can learn about the latest news from all over the world by following or subscribing to their favorite news types. With the continuous development of APP technology, users are not only receivers of one-way information but they can also act as senders, observers, and participants. By updating and improving the news program, users can obtain information, exchange opinions on social networks, online to offline reading, and comprehensive experience in the news application platform.

The goal of personalized news recommendation is news information modeling, and the specific modeling steps are shown in Figure 4.

### 3. The Meaning of Personalized News Feed

*3.1. Achieved Accurate Distribution of Content.* Personalized recommendation technology provides opportunities for the development of comprehensive news clients, but it also brings challenges to the development of news. In this era of data explosion, a large amount of information data is generated every second on the Internet, but the latest news is repeatedly transmitted by major media, which increases the amount of data and reduces the value of data information. In addition, the continuous appearance of repetitive information or uninteresting information will greatly reduce the user's interest in reading, thereby reducing the impact of media communication. Therefore, the emergence of personalized recommendation technology greatly meets the needs of users. The news system uses data mining technology to effectively obtain the user's personal preferences and characteristics, and then the news system personally recommends news content that meets the user's preferences and characteristics. This way greatly saves the user's time, and it also enhances the quality of the recommended content. In the current era, the phenomenon of time fragmentation is serious, and people are often interested in obtaining information in fragmented time. As for accessing and using media audiences, the more we make them lazy, the more labor-saving applications can enhance the goodwill of the audience.

*3.2. Change the User's Traditional Information Behavior Mode.* Under the traditional news dissemination model, news publishers are more proactive, while users can only passively understand the content published by news organizations, and users cannot participate in the discussion of news time. Under the new news dissemination model, users' initiative is enhanced, and users are no longer just receivers of news messages, they can also act as publishers,

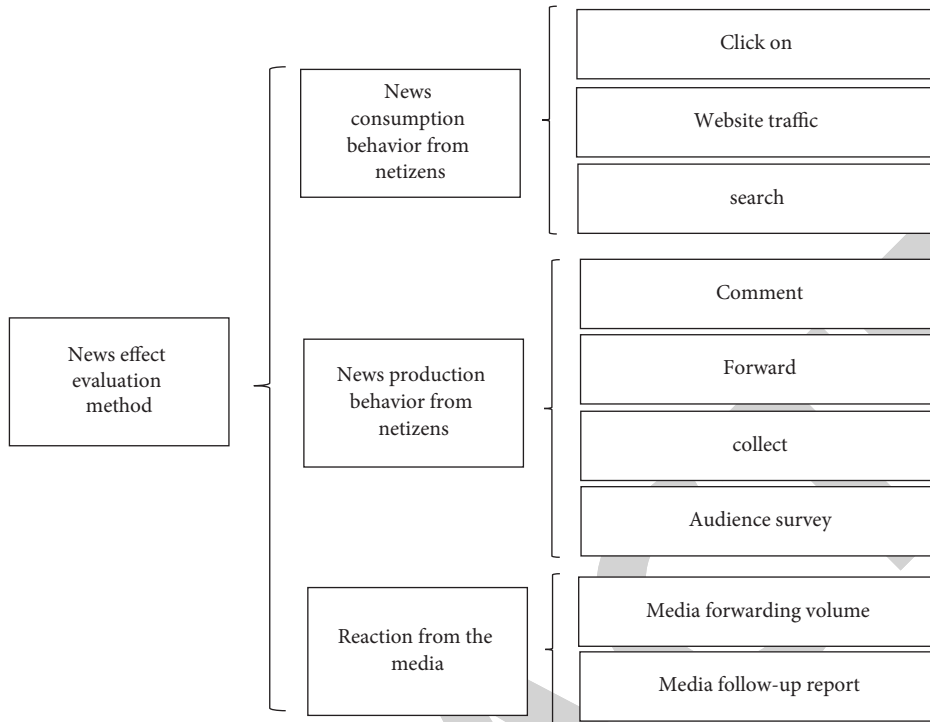


FIGURE 5: Evaluation method of news dissemination effect.

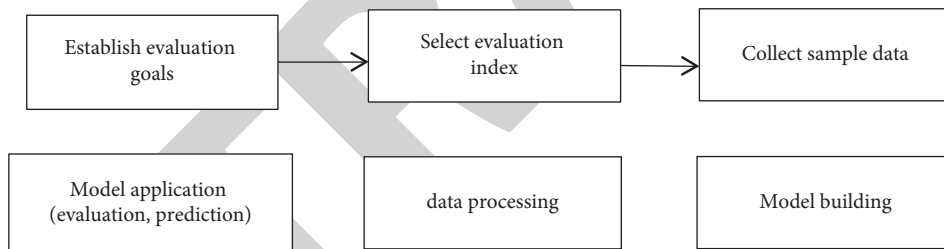


FIGURE 6: Building the idea.

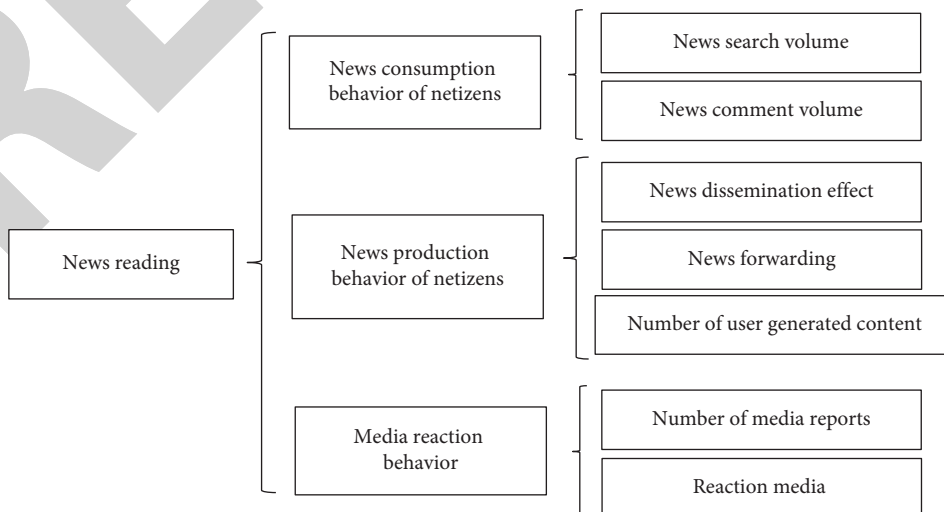


FIGURE 7: Selection of evaluation indicators.



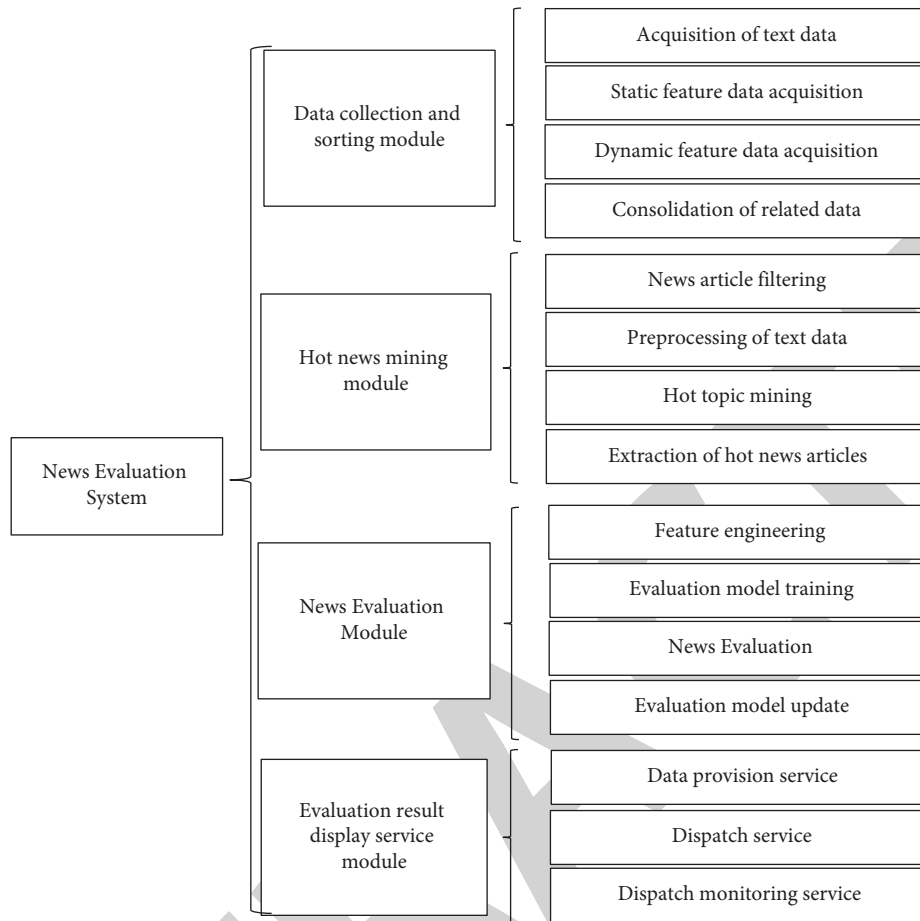


FIGURE 8: The functional design of the news evaluation system.

participants, and transmitters of news messages. Professional news reflects the rise of the media, and the public can learn a lot from the information they are interested in. With the rapid development of Internet technology, everyone has the initiative, and the public can express their opinions on the Internet.

#### 4. Strategies to Strengthen the Effect of Personalized News Recommendation

**4.1. Use Emerging Technologies to Strengthen News Recommendation Models.** In this era of popularization of the Internet, a large number of messages are generated on the Internet every day. The personalized recommendation technology also effectively recommends content that is more in line with user preferences and needs for users. However, this recommendation technology pays too much attention to the user's preferences, which will affect the user's acceptance of other information. Therefore, the different message types are divided into blocks, and the content that the audience is interested in can be personalized to different audiences. But at the same time, political current events and major accidents should also be actively pushed to users so that users can understand contemporary issues and pay attention to society, which effectively promotes the harmonious development of society.

**4.2. The Platform Should Strengthen Supervision and Assume Social Responsibility.** The explosive dissemination of network data now provides opportunities for the dissemination of various low-quality news information, so news platforms must strictly review various news content and strictly prohibit illegal information and vulgar content. And, it is necessary to censor the users who post this information to prevent the spread of vulgar content. Major media platforms need to encourage a large number of audiences to participate in the discussion of various news messages, and they need to obtain more positive opinions from the discussion of the masses and then use this as a starting point to solve some network problems. This can improve user satisfaction with news content and highlight the value of news media communication.

**4.3. The Government Should Strengthen Supervision and Improve Laws and Regulations.** The development of the Internet has given some criminals the opportunity to take advantage of the loopholes. In order to strengthen the legal system on the Internet, the government first needs to strengthen network management. Relevant personnel must use the monitoring system to monitor network information and resolutely stop the network dissemination of violent pornography and other information. Second, the

government should improve laws and regulations, guide users to strengthen their awareness of online laws, and cultivate users' awareness of using laws to protect their rights [14].

**4.4. The Audience Should Strive to Improve Media Literacy and Public Awareness.** With the popularity of the Internet, Internet users have increased dramatically. In order to effectively improve the Internet environment, netizens need to learn more cultural knowledge to improve their knowledge level, and they should also actively learn knowledge dissemination networks to improve their media literacy. When participating in the discussion of news information, relevant personnel should pay attention to their own behavior. Everyone should not spread rumors. They should treat problems rationally and consciously abide by laws and regulations. It is necessary to break the stereotypes of netizens and then break the shackles of the "information cocoon room," expand the channels to receive information from Internet users, multiple access to information, and obtain information through multiple channels.

## 5. Evaluation of the Effect of News Dissemination

**5.1. The Evaluation Method of News Dissemination Effect.** The dissemination effect of online news is mainly observed from three aspects: the news consumption behavior of netizens, the news production behavior of netizens, and the reaction of the media. The specific evaluation method is shown in Figure 5.

**5.2. Construction of News Communication Effect Evaluation System.** The construction of the news dissemination effect evaluation system must firstly construct the idea. The idea of this article for the construction of the news effect evaluation system is shown in Figure 6.

- (1) Evaluation index: when selecting evaluation indicators, the system can screen the indicators based on the news consumption behavior of netizens, the news production behavior of netizens, and the reaction behavior of the media. The selected indicators should include the cognitive attitude and behavioral willingness of news audiences. The selection of specific evaluation indicators is shown in Figure 7.
- (2) Index data collection and processing: the index data collected for each piece of news should include news reading volume ( $X_1$ ), news search volume ( $X_2$ ), news comment volume ( $X_3$ ), news forwarding behavior ( $X_4$ ), user-generated content ( $X_5$ ), media report volume ( $X_6$ ), and the number of reaction media ( $X_7$ ). The specific data collection method is

$$\begin{cases} Y_1 = u_{11}X_1 + u_{12}X_2 + u_{13}X_3 + \cdots + u_{17}X_7 \\ Y_2 = u_{21}X_1 + u_{22}X_2 + u_{23}X_3 + \cdots + u_{27}X_7 \\ Y_3 = u_{31}X_1 + u_{32}X_2 + u_{33}X_3 + \cdots + u_{37}X_7 \\ \cdots \\ Y_4 = u_{41}X_1 + u_{42}X_2 + u_{43}X_3 + \cdots + u_{47}X_7 \end{cases} \quad (4)$$

- (3) Determine the weight and composite index: the weight can reflect the importance of an indicator, and it is of great significance for determining the comprehensive indicator of the influence of news analysis. Generally speaking, the value of the weight can be considered in terms of the amount of information contained in the indicator, recognition ability, credibility, correlation, variation, coefficient of variation, and negative correlation coefficient [15]. The main method of component analysis is to reduce the dimensionality of the indicators in the data processing stage of the analysis indicators related to the influence of news dissemination. Therefore, when determining the weight, the contribution rate of the main elements can be directly replaced by the weight of each main element in the comprehensive index. Subsequently, the final news dissemination effect evaluation index is obtained through the weighted average formula:

$$y = \sum_{i=1}^p r_i Y_i. \quad (5)$$

After using the sample data to obtain the calculation method of the comprehensive index of news dissemination influence analysis, it can be calculated by replacing the new news index data. With the development of the Internet and the increase in the number of netizens and media, user behavior data such as reading, commenting, and forwarding on the Internet will show explosive growth. Over time, new data need to be collected repeatedly to adjust the model. When assessing the impact of a large number of news media, relevant personnel can also directly use the data on the above methods to establish a new model for comprehensive analysis.

**5.3. Design and Implementation of News Evaluation System.** The functional design of the news evaluation system is shown in Figure 8.

Among them, the program implementation code of news adding related modules is as follows:

```
#include file = "adminconn.inc"
<%
Function changechr(str)
changechr = replace(replace(replace(replace(str,"<","<"),">",">"),chr(13),"<br>")," "," ")
```

```

change-
chr = replace(replace(replace(replace(changechr,
"[owen]" , "<img src = \"), "[b]" , ""), "[red]" , ""
<font color = CC0000>"), "[big]" , "<font size = 5>")
changechr = replace(replace(replace(replace(change
chr, "[/owen]" , "><img>"), "[/b]" , ""), "[/red]" , "</
font>"), "[/big]" , "</font>")
end function
%>
<%
id = request("id")
title = request("title")
BigClassName = request("BigClassName")
SmallClassName = request("SmallClassName")
msg = changechr(request("msg"))
user = request("user")
add = request("add")tel = request("tel")
e-mail = request("e-mail")
set rs = server.createobject("adodb.recordset")
sql = "select * from NEWS where id = "&idrs.open
sql,conn,1,3
if not (rs.bof and rs.eof) then
rs("title") = title
rs("msg") = msg
rs("user1") = user1
rs("BigClassName") = BigClassName
rs("SmallClassName") = SmallClassName
rs("add") = add
rs("tel") = tel
rs("e-mail") = emailrs.update
rs.close
set rs = nothing
response.write "<script language = 'javascript'>" &
chr(13)
response.write "alert('News modified successfully!');" &
Chr(13)
response.write "window.document.location.href =
'admin_NEWS.asp';"&Chr(13)
response.write "</script>" & Chr(13)
Response.End
else
response. Write("database error")
end if
%>

```

## 6. Conclusions

In summary, high-performance recommendations can not only save users time but also attract more visitors to users. With the rise of news, the rapid development of the mobile

Internet, the growth of user-generated content, and the improvement of the accuracy of user retrieval features, the majority of scientific researchers will face new research opportunities and challenges.

## Data Availability

The data used to support the findings of this study are available from the corresponding author upon request.

## Conflicts of Interest

The authors declare no conflicts of interest.

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