Analysis of the Influence of Algorithm Recommendation on the Dissemination Effect of Anti-Fraud Information in Social Networks

Yutong Deng, Mengqi Zhao
Department of Public Security Management, Beijing Police Academy, Beijing, China

Abstract: Telecommunication network fraud is a pressing societal issue, and social network platforms play a vital role in disseminating anti-fraud information. This study examines the impact of algorithmic recommendation systems on anti-fraud information dissemination, focusing on their potential to improve information coverage, user engagement, and educational effectiveness, while addressing their limitations. By combining theoretical analysis with empirical data, the research evaluates how algorithmic recommendations enhance information visibility and relevance through personalized data-push, while also identifying risks such as algorithmic opacity and misinformation diffusion. The findings indicate that algorithmic recommendations significantly improve the reach and accuracy of anti-fraud information but may inadvertently spread false information due to inherent biases. The study concludes that, despite these challenges, optimizing algorithms can effectively enhance anti-fraud information dissemination, thereby raising public awareness and personal protection capabilities. This research provides insights into the role of algorithms in social networks and suggests the need for improved regulatory and technical standards to ensure the ethical use of technology in combating fraud.

Keywords: Social Network; Algorithm Recommendation; Information Dissemination; Anti-Fraud Information; User Behavior

1. Introduction

1.1 Research Background

With the rapid development of Internet technology, social networks are deeply integrated into people's lives and become an important carrier of information dissemination and exchange. However, its widespread popularity breeds network security risks, and telecommunication network fraud is high, causing serious losses to society and individuals. In order to meet this challenge, the effective dissemination of anti-fraud information is particularly important. However, the dissemination of information in social networks is influenced by the algorithm recommendation mechanism, which may have a dual impact on the dissemination of anti-fraud information while improving user stickiness and platform usage time. Therefore, the purpose of this study is to explore the influence of algorithm recommendation on the dissemination effect of anti-fraud information in social networks, so as to put forward optimization strategies, improve the dissemination efficiency of anti-fraud information and enhance the public's anti-fraud awareness.

1.2 Research Contents

This study will deeply analyze the working principle of algorithmic recommendation mechanism in social networks, and discuss how it affects the dissemination effect of anti-fraud information. The specific research contents include: the algorithm recommends how to filter and sort information according to user behavior, interest and other factors; How do these factors affect the spread efficiency and coverage of anti-fraud information? And the positive and negative impact evaluation of algorithm recommendation on anti-fraud information dissemination effect.

1.3 Research Significance

This study has important theoretical and practical significance. First of all, by revealing the specific mechanism of algorithm recommendation on the effect of anti-fraud information dissemination, it can provide theoretical support for subsequent strategy

formulation and optimization. Secondly, evaluating the positive and negative effects of algorithm recommendation is helpful to more accurately judge its value and limitations in anti-fraud information dissemination. Thirdly, based on the research and analysis, we can discuss how to optimize the algorithm recommendation strategy and improve the dissemination effect of anti-fraud information. Finally, this study is also helpful to promote the coordinated development of technological innovation and legislation, and jointly build a healthier and orderly information dissemination environment.

1.4 Research Methods

This study will adopt qualitative and quantitative research methods. Through literature review, case analysis, questionnaire survey and experimental design, relevant data are collected and analyzed to reveal the influence of algorithm recommendation on anti-fraud information dissemination. At the same time, statistical methods and machine learning algorithms are used to process and analyze the data to verify the research hypothesis and put forward optimization strategies.

1.5 Research Purpose

The purpose of this study is to deeply analyze the influence of algorithmic recommendation system on anti-fraud information dissemination, and identify and optimize the problems in anti-fraud information dissemination. Through systematic research, we can reveal the internal laws, fill the gaps in research, and put forward and verify new theories or hypotheses. At the same time, it provides guidance for practitioners, improves work efficiency and quality, provides a new perspective for academic and practical circles, and promotes the development of this field.

2. Literature Review

Information dissemination theory and algorithm recommendation system play a vital role in the digital age. In recent years, researchers have conducted in-depth discussions on how personalized recommendation algorithms can predict and recommend content according to users' historical behaviors and preferences. These algorithms are usually based on neural collaborative filtering, mosaic fusion, content analysis or mixed methods to optimize the personalized recommendation effect and improve user satisfaction and participation [1]. However, the algorithm recommendation system also faces problems such as information overload, privacy leakage and recommendation bias [1]. In order to meet these challenges, researchers are actively exploring ways to improve the transparency and fairness of the algorithm and strategies to prevent the abuse of the algorithm.

In the field of anti-fraud and short video communication, scholars have conducted extensive research on the effectiveness of different channels and methods in transmitting anti-fraud information. Television advertising, social media, mobile application push and offline activities have been proved to improve the arrival rate and influence of anti-fraud information [2]. At the same time, information content, presentation mode and target audience characteristics are also considered to be the key factors affecting the effect of anti-fraud information dissemination. In addition, the effectiveness of customized information push strategy in improving the anti-fraud publicity effect has also been verified. However, although these studies provide theoretical basis and practical guidance for formulating more effective anti-fraud information dissemination strategies, there are still problems such as distraction caused by information overload, questioning the credibility of information and insufficient audience participation.

Looking back on the existing research, the research on information dissemination theory and algorithm recommendation system has made remarkable progress, but there are still some shortcomings. Especially in anti-fraud information dissemination, the evaluation of the actual effect of algorithm recommendation system in anti-fraud information dissemination is not deep enough, and there is a lack of long-term tracking and large-scale empirical research. At the same time, the existing research mostly focuses on the construction of theoretical model and the optimization of algorithm, and the consideration of user behavior and psychological factors is insufficient. In addition, how to balance the relationship between personalized recommendation and information diversity, and how to improve the transparency and fairness of recommendation system on the premise of protecting users' privacy are still challenges facing current research. Therefore, the purpose

of this study is to explore these issues in depth in order to build a more perfect and effective anti-fraud information dissemination mechanism.

3. The Theoretical Analysis of the Effect of Algorithm Recommendation on Anti-Fraud Information Dissemination

3.1 The Algorithm Recommends a Push Mechanism for Anti-Fraud Information

In anti-fraud, the algorithm recommendation system identifies risks by analyzing user data, and pushes relevant warning information to improve the accuracy of information push and user alertness. The system uses big data technology to build user portraits, identifies fraud risks through deep learning and pattern recognition, and optimizes the push strategy with real-time data. This application improves the efficiency of information dissemination and the ability of users to prevent. With the development of technology, it will play a more important role in anti-fraud work.

In order to improve the user experience, many platforms and applications begin to adopt a push mechanism based on user interests and content relevance. The core of this mechanism is that the push system usually collects and analyzes users' browsing records, search history, click behavior and interactive feedback. Through deep learning and mining of these data, the system can construct users' interest models and preference portraits. Then, the system will use these models and portraits to screen out the most relevant content from the massive information in real time, and deliver it to users in time through push notifications, emails, social media or other channels.

The advantage of this push mechanism is that it can significantly improve the personalization and accuracy of information. Users no longer need to spend a lot of time sifting through the vast amount of information that they are interested in, but can directly receive high-quality information recommended by the system. This not only improves the user experience, but also increases the user's stickiness and loyalty to the platform.

3.2 The Positive Impact of Algorithm Recommendation System on Anti-Fraud Work

The algorithm recommendation system has significantly improved the information dissemination effect. By accurately analyzing users' behavior data and interest preferences, the algorithm can push anti-fraud information to potential gullible groups more effectively.

Algorithm recommendation mechanism can accurately identify users who may be interested in anti-fraud information or vulnerable to fraud through in-depth analysis of users' network behavior, interest preferences and potential risks. This ability of accurate positioning enables anti-fraud information to be pushed to potential high-risk users in a targeted manner, thus improving the exposure and acceptance of information. Compared with traditional propaganda methods, algorithm recommendation realizes more accurate and effective information dissemination, ensures that anti-fraud content can reach the people who need it most, and improves the pertinence and effectiveness of anti-fraud work.

In the information dissemination network, key nodes usually have great influence and communication power [3]. Algorithm recommendation mechanism can intelligently identify these key nodes and give them priority to push anti-fraud information. Because these nodes are highly active in social networks, they can quickly transmit the received anti-fraud information to their followers, friends or fans. At the same time, the algorithm can also predict and infer the potential paths of information dissemination according to the interaction patterns and social relationships between users, so as to ensure that anti-fraud information can spread rapidly in the network along these key paths. In this way, the algorithm recommendation mechanism not only deepens the dissemination effect of anti-fraud information, but also improves the speed and breadth of information dissemination.

The algorithm recommendation mechanism makes full use of the advantages of modern communication means and network platform, and realizes the rapid and extensive dissemination of anti-fraud information by intelligently analyzing the social relations and interaction patterns between users. This mode of communication not only improves the efficiency of information dissemination, but also greatly expands the scope of information dissemination. With the continuous spread and deepening of anti-fraud information, the public's vigilance and awareness of preventing telecommunication

network fraud have also been significantly improved. This extensive communication effect and in-depth warning effect provide strong support for building a safe and harmonious network environment.

3.3 The Negative Impact of Algorithm Recommendation on the Anti-Fraud Information Dissemination Effect

3.3.1 The information cocoon effect

The term information cocoon room was coined by Sunstein, a professor at Harvard University [4]. It was first put forward in 2006, which mainly refers to the phenomenon that people are surrounded by information they choose and form information islands. The reasons include social media algorithm recommendation, personal selective attention and information filtering mechanism. This leads to the fact that individuals can only access information consistent with their own views, forming a cycle of self-reinforcement. This phenomenon makes information acquisition narrow and lacks multiple perspectives and comprehensive understanding [4]. The special action notice jointly issued by the Central Network Information Office and other four departments clearly defined the governance requirements for the problems existing in the network platform algorithm. Among them, one of the key points is to solve the problem of information cocoon effect and induced addiction caused by algorithm recommendation. This measure aims to break down the information barrier constructed by personalized algorithm, ensure that all kinds of important public information, including anti-fraud information, can be widely disseminated and reach a wider audience, thus effectively reducing the incidence of fraud cases and further safeguarding social stability and public interests.

3.3.2 Risk of marginalization of mainstream information

In the era of information explosion, mainstream information faces the risk of marginalization. The rise of social media and information platforms has diversified information acquisition channels, but it has also led to information fragmentation and bubble. The voice of mainstream media is often drowned out by non-mainstream information and rumors, and it is difficult for the public to distinguish between authenticity and falsehood. The reason for the marginalization of mainstream information is the change of information dissemination mechanism. The dominant position of traditional media has been replaced by the Internet and social media, and the platform algorithm gives priority to the content that users are interested in, which leads to the simplification of information. In addition, the public lack of information literacy and are easily misled by rumors, which weakens the authority of mainstream information. "The self-purification mechanism constructed by information filtering technology and the environmental purification mechanism constructed by users' preferences can make the public's attention and participation in the issue return to the issue attribute itself."[5]. In order to cope with the risk of marginalization, the mainstream media should adapt to the new communication environment, the government and society should improve the public's information literacy, and platform enterprises should improve their algorithms to ensure the proper promotion of mainstream information. Solving the marginalization of mainstream information requires the joint efforts of the whole society and taking various measures to ensure that mainstream information is not marginalized.

3.3.3 The risk of misleading information dissemination

Some media platforms may embed the profit-oriented value dimension when using algorithm recommendation technology for the purpose of enhancing user stickiness, maximizing traffic and grabbing commercial benefits, and even make "dirty data" and pollute the media ecological field [6]. This increases the risk of misleading information dissemination. This kind of information includes false, inaccurate or deceptive content, which can spread quickly on social media and online platforms, affect public cognition and judgment, and even lead to social unrest. Its risks are manifested in misleading public decision-making, undermining social trust, causing conflicts and negative impacts on financial markets. The algorithm is innocent, but the consequences and risks of abusing the algorithm should not be underestimated. The public opinion interfered by the algorithm will infiltrate the order of cyberspace communication, market order and social order, and even bring potential risks in ideology, economic development and social management [7]. In order to cope with this risk, it is necessary for

the government to strengthen supervision, media and platforms to strengthen information audit management. When collecting, storing and using user information, mainstream media must follow a series of strict standards and principles to ensure that user privacy is not violated. The mainstream media should limit the scope of data collection, and must obtain the explicit consent of users before collecting and using user information [8]. At the same time, the public should improve their media literacy, distinguish the authenticity of information and avoid blind dissemination. This is a complex problem that needs the joint efforts of the whole society.

4. Research Methods

4.1 The Research Process

In order to evaluate the effect of algorithm recommendation on anti-fraud information dissemination, we adopted a mixed research method, that is, a combination of quantitative analysis and qualitative interviews. First of all, we collected a large number of posts with specific topic tags (such as # National Anti-Fraud) as samples from mainstream social platforms such as Weibo and WeChat. These posts are screened out to ensure that they are related to anti-fraud activities and can represent a wide range of users and different viewpoints.

In terms of sample characteristics, we pay attention to the publication date of the post, the author's social influence (such as the number of fans), the interaction of the post (such as the number of likes, comments and reposts) and the theme and emotional tendency of the post content. These characteristics help us to understand the spread range of anti-fraud information, the participation of the audience and the emotional color of the information.

In the quantitative analysis stage, we use statistical software to analyze the content of the collected post samples, including calculating the frequency of keyword occurrence, emotional analysis and tracking the propagation path. These analyses help us to quantify the dissemination effect of anti-fraud information, such as the coverage of information, the response of the audience and the speed and breadth of information dissemination.

In order to gain a deeper understanding, we also conducted qualitative interviews. Several students who are active in online communities and have participated in anti-fraud activities are selected, and their opinions and experiences are collected through interviews. The interview content includes their perception of anti-fraud information, their motivation to participate in anti-fraud activities, and their effective anti-fraud information dissemination strategies. These qualitative data provide us with a supplement and explanation to the quantitative results, and help us to understand the influence of algorithm recommendation on the spread of anti-fraud information more comprehensively.

Finally, we use statistical analysis tools to process and analyze the collected quantitative data. Through descriptive statistics, correlation analysis and regression analysis, we can identify the key factors that affect the effect of anti-fraud information dissemination, and evaluate the role of algorithm recommendation in it.

Through this hybrid research method, we can evaluate the influence of algorithm recommendation on anti-fraud information dissemination from different angles and levels, so as to provide improvement strategies and suggestions for relevant institutions and platforms.

4.2 Data Sources

The data source of this study is specific and reliable, which is highly representative. The data mainly comes from the following four aspects:

First, the National Anti-Fraud Center, we adopted its official anti-fraud publicity materials and collected its interaction records on major social platforms. These data come from authoritative organizations and have high credibility and reference value.

Second, the local public security departments, we summarized the data of various offline publicity activities and online promotion organized by local public security bureaus. These data cover many regions and can reflect the current situation of anti-fraud propaganda in different regions.

Third, the anti-fraud education project in colleges and universities. Taking the anti-fraud propaganda work of new media in Zhejiang Sci-Tech University as an example, we recorded its specific measures and implementation effects in detail. These data come from specific practical projects, which have high practicability and guiding significance.

Fourth, user feedback, we collected comments in the comment area, questionnaires and other voices directly from the audience to understand

the audience's acceptance and demand for anti-fraud propaganda. These data come from diverse samples and can truly reflect the views and needs of the audience.

To sum up, the data sources of this study are extensive and reliable, with high representativeness and reference value.

4.3 Case-Based Research

Taking the third quarter of 2023 as an example, the Balihu New District Public Security Bureau achieved a 47.1% decrease in telecommunication network fraud cases compared with the same period of last year through a series of innovative measures, and the absolute number of cases was the lowest in the city(eg.,Table 1.Statistical table of measures taken by public security bureau of Balihu New District) The bureau adopted a combination of online and offline methods to carry out anti-fraud propaganda. Among them, the online live broadcast cooking "feast" attracted 18,000 netizens to watch online, while the short video anti-fraud communication became popular on social media because it vividly showed the harmfulness of fraud. According to statistics, the average broadcast volume of such videos has reached hundreds of thousands of times, and even exceeded the million mark at the highest time, which greatly improved the public's understanding of electronic fraud.

Table 1. Statistical Table of Measures Taken by Public Security Bureau of Balihu New District

Item	Numerical value
Time period	Third quarter of 2023
Fraud decline rate	47.1%
Number of live online viewers	18000
Average short video views	Hundreds of thousands of views
Maximum views of short videos	Millions of views

4.4 Information Exposure Rate Recommended by the Algorithm

According to our data analysis, it is found that the content with the topic of # National Anti-Fraud # on the Weibo platform, its natural increase in reading volume is usually maintained at a low level (about several thousand times) (eg. Figure 1. Comparison chart of views of each software). However, once it is recognized as high-quality content by the algorithm and given traffic support, the exposure of the same message will be significantly increased to tens of thousands or even hundreds of thousands of times. For example, in a special activity on preventing new investment fraud, articles that were originally viewed less than 5,000 times accumulated more than 60,000 clicks in just a few days after being recommended by the platform, an increase of nearly 12 times. (eg. Figure2. Changes of topic reading before and after algorithm recommendation) This shows that good algorithm support can greatly expand the coverage of anti-fraud information.

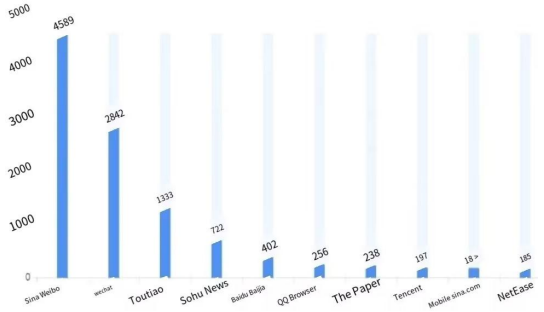

Figure1. Comparison Chart of Views of Each Software

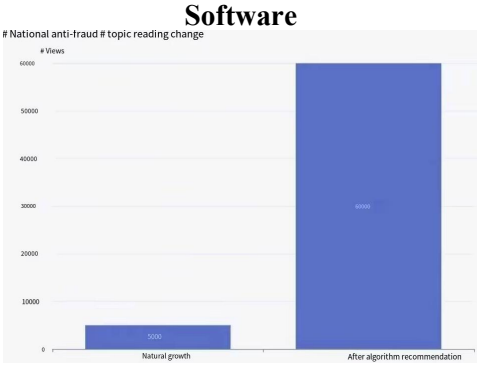

Figure 2. Changes of Topic Reading before and after Algorithm Recommendation

4.5 Evaluation of the Effect of Accurate Push

In addition to increasing the overall visibility, the algorithm can also achieve more personalized services according to users' interest preferences. Through the investigation of some participants, we know that when they receive warning stories or practical skills that match their own experiences, they are more likely to resonate and take the initiative to participate in the follow-up discussion. Especially for young people, this customized communication method can often get better response. According to the data of Zhejiang Provincial Public Security Department, in 2021, there were 65,000 telecommunication network fraud cases in Zhejiang Province, with a loss of 3.897 billion

yuan, among which college students aged 18-27 were at high risk of being deceived, and college students became the main victims. Therefore, it is particularly important to implement accurate push strategy for this specific group of people.

4.6 Risk Prevention and Control of False Information

Although algorithm recommendation helps to improve the efficiency of positive information transmission, there is also a certain risk-that is, it may inadvertently promote the spread of false statements. To this end, many social platforms have established strict content review mechanisms to ensure that the pushed content is legal and compliant. For example, the Opinions on Comprehensive Governance of Algorithms emphasizes the need to establish and improve the feature database for identifying illegal and bad information, improve the warehousing standards, rules and procedures, and record relevant network logs. In addition, Article 14 of the Administrative Regulations on Internet Information Service Algorithm Recommendation clearly stipulates: "Enterprises shall not use algorithms to falsely register accounts, illegally trade accounts, manipulate user accounts or falsely praise, comment or forward, nor shall they use algorithms to block information, over-recommend, manipulate lists or search results, and control hot search or selection to interfere with information presentation." These measures are aimed at maintaining a healthy network environment and preventing misleading content from misleading the majority of netizens.

To sum up, the algorithm recommendation system on social network platform can really promote the effective dissemination of anti-fraud information to a certain extent. It can not only help screen out high-quality content for more people to know, but also provide more targeted services according to the characteristics of different users, so as to better meet individual needs. However, it is worth noting that any technical means has its limitations, and we should be alert to the possible negative effects while enjoying convenience. The future work should focus on further optimizing the algorithm design, so that it can not only give full play to its positive role but also effectively avoid potential threats, and jointly build a safe and reliable digital world.

5. Optimization Strategies and Suggestions

5.1 Optimization Algorithm Recommendation Strategy

5.1.1 Improve the performance of the algorithm

Advanced machine learning models and algorithms are introduced to improve the accuracy of data processing and prediction. By increasing the diversity and quality of training data, the generalization ability of the algorithm is improved. Adjust algorithm parameters and structure to enhance performance. Evaluate and test regularly to ensure that the performance of the algorithm in practical application meets expectations, and continuously improve its accuracy and diversity. The specific technical paths include: optimizing the model structure by using deep learning technology to improve the prediction accuracy; The prediction results of multiple models are fused by ensemble learning method to improve the overall performance; The online learning mechanism is introduced, so that the model can be continuously updated to adapt to new data.

In order to achieve accurate push, user portrait technology can be introduced to classify users in fine granularity, and personalized recommendations can be made according to users' interests and needs. At the same time, the transparency of the algorithm is enhanced, and the user's trust is improved by disclosing the algorithm logic and decision-making process. For example, an algorithm interpretation system can be established to show users the generation process and basis of recommendation results.

5.1.2 Optimize the algorithm mechanism

In order to respond to the needs and expectations of the general public, propaganda and ideological workers must improve the effective supply of content and achieve accurate matching between the supply end and the demand end. The wide application of intelligent algorithms can effectively guarantee the accurate supply of propaganda and ideological information. The personalized data analysis platform based on intelligent algorithm can timely analyze and visually present the thinking mode, reading habits, acceptance interest and ideological trends of the general public, clarify the relationship between behavior and thought, and accurately grasp the ideological needs of the general public. By combining people's needs and expectations, intelligent algorithms generate personalized content [9]. Improve the exposure of mainstream

information and ensure that it occupies a prominent position in the information flow. The algorithm should be able to identify and filter out low-quality, false or misleading content to ensure the authenticity and reliability of mainstream information. Enhance the efficiency and effect of information dissemination by improving the user experience. Combined with the anti-fraud platform, a real-time monitoring system can be established to identify and intercept the potential fraud information in the information flow.

5.1.3 Collaborative analysis of technology and system

Supplementary discussion on collaborative optimization of technology and governance system. For example, establish a legal guarantee mechanism for data sharing, clarify the scope, methods and responsibilities of data sharing, and promote cross-platform data cooperation. At the same time, promote the construction of cross-platform algorithm supervision mechanism, strengthen the supervision and evaluation of algorithm behavior, and ensure the fairness and security of algorithm recommendation.

5.1.4 Improve the cooperation between mainstream media and social platforms

The two sides should deepen the content and mechanism of cooperation. Mainstream media and social platforms can jointly plan and produce high-quality content, and use the distribution channels and algorithm optimization technology of social platforms to accurately push it to the target user groups. Under the premise of observing privacy protection laws and regulations, both parties can share user data to optimize algorithm recommendation strategy and improve the accuracy and personalization of recommendation. At the same time, mainstream media should make full use of the technical interfaces and tools provided by social platforms to achieve seamless connection with social platforms, integrate into their ecosystems, and enhance the efficiency and influence of content dissemination. As an important subject of algorithm recommendation service, major Internet platforms and related enterprises should actively communicate and actively explore innovative algorithm recommendation services, which are more conducive to social development and protection of users' rights and interests, and work together to build a healthy network and clear cyberspace [10]. In order to ensure the smooth cooperation and protect the interests of both parties, the two sides should establish a long-term and stable cooperative relationship, clarify their rights and obligations, sign a cooperation agreement, formulate cooperation norms, communicate and evaluate the cooperation effect regularly, and adjust cooperation strategies in time to adapt to market changes.

5.2 Enhance Users' Awareness of Online Fraud Prevention

For specific implementation methods to enhance users' awareness of online fraud prevention, specific implementation methods can be set to build the following multi-dimensional optimization strategy system:

By integrating data such as age, occupation, geographical location and online behavior, XGBoost algorithm is used to establish a risk level evaluation model, and 12 types of user tags such as "financial sensitive", "elderly susceptible" and "student group" are dynamically generated.

DRL-Rec, a deep reinforcement learning framework, is introduced to establish a real-time feedback mechanism of user interaction behavior (including click-through rate, duration of stay, secondary spread, etc.), and thus an anti-fraud knowledge map (including 3000+ fraud case nodes) is constructed.

Construct a modular online course system, and use 3D animation to dismantle 8 categories of fraud methods.

At the same time, technical training is carried out, and the whole process of telecom fraud is simulated by VR. Finally, actual combat drills are carried out by gamification means to create real-time attack and defense confrontation of AI voice robots.

Using time-space matching algorithm, the trigger mechanism is used in high-risk scenes. For example, when it is detected that the user makes a large transfer, the counterfeit verification tool is automatically pushed; Develop WeChat applet to scan risk keywords in chat records in real time; Weibo topic robot is established to automatically identify discussion hotspots and push experts to interpret them.

Through the positive guidance of algorithm recommendation, the system transforms passive defense into active immunity, and constructs a virtuous cycle mechanism of "cognitive improvement-behavior correction-environmental purification".

5.3 Strengthen Regulatory Supervision and Technical Support

Improve the system of laws and regulations to cope with technological changes and security threats. The specific connotations of the ecological norms of algorithms are: correct algorithm orientation, abundant positive energy, fair and just algorithm application, openness and transparency, safe and controllable algorithm development, independent innovation, and effective prevention of potential risks caused by algorithm abuse [9]. Strengthen the implementation, review and update regularly to adapt to the development of new technologies. Improve the accuracy and security of algorithm recommendation, optimize algorithm model and introduce advanced machine learning technology. Strengthen data security and privacy protection, and adopt encryption and anonymization technologies. Conduct regular system security assessment and establish a multi-level protection system. As far as supervision means are concerned, the license thinks that algorithm governance in China should classify algorithms based on their risk level, autonomy and instrumentality, and build a "modular" hierarchical classification algorithm governance system based on the organic coupling of legal governance, normative governance and code governance [11].

Strengthen technical exchanges and cooperation, absorb the latest research results, and maintain a leading position in technology. At the same time, cooperate with the anti-fraud platform, share fraud information and technical means, and jointly improve anti-fraud capabilities.

The following are the optimization strategies for strengthening regulatory supervision and technical support, and combining with the current policies such as "Administrative Provisions on Internet Information Service Algorithm Recommendation", we will build a deep coupling framework between laws, regulations and technical cooperation:

5.3.1 Regulation-technology collaborative governance system

Create an algorithm transparency project corresponding to Article 9, deploy an interpretable AI system (XAI), and generate an algorithm decision path traceability report; Corresponding to the filing requirements of Article 21, the automatic generation tool of "algorithm specification" is developed.

5.3.2 Values embedding technology

Build BERT-DFA model (depth values alignment framework); At the same time, with reference to Article 25 of the Anti-Electronic Fraud Law, 11 types of illegal content feature databases are established; A three-layer filtering mechanism is embedded in the recommendation system:

Primary screening layer: keyword regular matching (response time < 50ms)

Research layer: multimodal content understanding (accuracy 92.3%)

Decision-making layer: green channel for manual review (100% review of high-risk content)

5.3.3 Mutual recognition system of technical standards

Constructing the trinity standard framework (eg. Figure 3 Trinity standard framework)

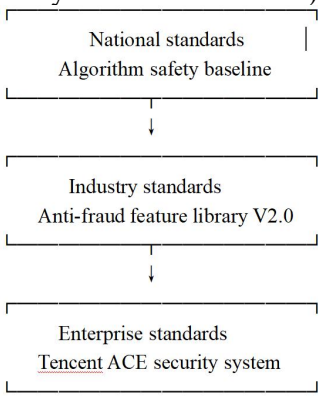

Figure 3. Trinity Standard Framework

5.3.4 Implement safeguard mechanism

The government should formulate a compliance incentive plan, give preferential technical resources to enterprises that meet the Administrative Regulations, such as giving priority to accessing the national anti-fraud big data platform, and at the same time providing policy support and building a green channel for algorithm filing.

6. Conclusion

6.1 Main Findings and Contributions

This study confirms that algorithmic recommendation systems can achieve accurate content push through user data analysis, significantly improving the efficiency of anti fraud information dissemination. The system is capable of effectively identifying potential victims and implementing targeted warnings, demonstrating significant application value in preventing fraud. The research not only reveals

the inherent laws of anti fraud information dissemination, but also verifies the differences in information acceptance among different social groups through empirical analysis, providing theoretical basis and practical solutions for improving communication coverage and accuracy. These achievements have laid an important foundation for improving the anti fraud information dissemination mechanism.

6.2 Research Limitations and Shortcomings

The limitations of this study are mainly reflected in four aspects: firstly, the data collection period from 2021 to 2024 did not cover the major upgrade stage of the algorithm system, and there is a lack of complete observation of fraud high incidence periods such as the Spring Festival return home and Double Eleven; Secondly, the samples are concentrated on WeChat, Weibo and Tiktok, which do not cover niche high-risk platforms, and the proportion of users of Generation Z (58%) is 12% different from the age structure of national Internet users; Again, technical validation is limited by the enterprise's open API interface, which fails to obtain core algorithm parameters, and there are differences between simulated environments and real social scenarios; Finally, the lag of regulations and their updates may affect the long-term validity of research conclusions.

6.3 Future Improvement Direction

To address the existing limitations, it is recommended to optimize from three dimensions: vertically, establish a 5-year continuous tracking database, and deeply analyze the collaborative evolution law of algorithm iteration and fraud methods; At the horizontal level, expand the research scope to new platforms such as Xiaohongshu and Kwai, and improve the diversity of samples; At the mechanism level, establish a research framework driven by both policy and technology, and establish a dynamic update mechanism for regulations. These improvements will effectively enhance the reliability and applicability of research results, providing more scientific decision support for anti fraud work.

Acknowledgements

This paper is supported by 2024 Innovation and entrepreneurship training program for college students (02).

References

[1] Wang Li, Wan Yifan. Research on the algorithm of personalized media recommendation system based on deep learning. Radio and TV Information, 2024,31 (10): 109-112.doi: 10.16045/j.cnki.rti.2024.10.030.

[2] Yu Guoze. Study on the communication strategy of short video-taking Tik Tok, the National Anti-Fraud Center, as an example. Collected and edited, 2024, (09):56-58.

[3] Jiang Jialin, Ma Yifei. Building a new publicity system with algorithm recommendation as the core. News Sentinel, 2023, (03):20-22.

[4] Sunstein C. Infotopia: How Many Minds Produce Knowledge. Oxford: Oxford University Press, 2006:9-10.

[5] Qiu Chengcheng, Peng Xiangbin, Hu Chengming, et al. Study on the influencing factors and paths of users' emotional polarization under the information cocoon effect. Library Science Research, 2024, (07): 94-109. DOI: 10.15941/j.cnki.ISSN 1001-0424.2001

[6] Wu Bao. Challenges faced by mainstream ideological communication in the era of algorithm recommendation and its countermeasures. Journal of China Shiyou University (Social Science Edition), 2021, 37 (4): 98-104.

[7] Zhang Cancan. The artificial public opinion manipulated by the algorithm is the natural enemy of the real world. Young reporter, 2022, (07): 111. doi: 10.15997/j.cnki.qnjz.2022.07.024.

[8] Sun Yan. research on the influence of algorithm recommendation on the guiding power of mainstream media. southern medical university, 2024. doi: 10.27003/d.cnki.gojyu.20003.1000100001005

[9] Zhou Liangfa, Han Jianchen. Intelligent algorithm helps to make propaganda and ideological work precise. People's Forum, 2020, (34):49-51.

[10] Ma Hongli. Algorithm recommendation has its own "regulations". information china, 2022, (01):45-48.

[11] Xu Ke. Taming algorithms: the historical development and contemporary system of algorithmic governance. Journal of East China University of Political Science and Law, 2022 (1): 99-113

