

# AI Optimization Strategy for Streaming Financial Advertising Placement

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**Abstract:** In the financial field, streaming media advertising is gradually showing its indispensable position. However, traditional advertising methods have encountered difficulties such as insufficient accuracy, heavy cost burden, and low conversion efficiency. In this context, artificial intelligence (AI) technology, with its excellent data analysis capabilities, user profiling, personalized promotion, and creative content generation advantages, has brought new ideas for the precise placement of streaming media advertising in the financial field. This article deeply analyzes the specific application of AI technology in data collection and organization, advertising content improvement, advertising strategy formulation, and user privacy protection and compliance, aiming to explore how to reduce advertising costs, improve user interaction experience and advertising effectiveness through AI technology, and promote innovation and progress in the financial advertising market.

**Keywords:** Streaming media advertising; Financial advertising; AI optimization; User profile; Advertising Strategy.

## 1. Introduction

In today's rapidly developing streaming media, its advertising model has gradually transformed into a key means of promotion in the financial sector. However, the current advertising publishing methods are inadequate in adapting to the diverse needs and complex behavioral characteristics of modern consumers, and their high investment and unsatisfactory conversion efficiency have become industry challenges. By utilizing the fine user profiling and intelligent push functions of artificial intelligence, efficient optimization of financial advertising in streaming media can be achieved. This article aims to comprehensively analyze the application strategies of artificial intelligence in the precise promotion of financial advertising and the improvement of user experience, in order to improve advertising efficiency and reduce cost expenditures.

## 2. Definition and Forms of Streaming Media Advertising

Streaming media advertising refers to commercial promotional information embedded during the playback of online audio or video. This promotion method is based on streaming media technology, which delivers audio and video data to users through real-time data transmission, achieving seamless integration between advertising and program content. Streaming media advertising is favored for its rapid information dissemination, precise targeting, and high interactivity. It typically utilizes big data analysis and artificial intelligence technology to enhance user experience and advertising effectiveness. As a key part of the digital advertising field, streaming media advertising covers multiple areas such as video websites, audio software, social networks, and real-time live streaming. This type of advertisement presents a rich variety of forms, and Table 1 shows several typical types of advertisements and their attributes.

**Table 1.** Forms of Streaming Media Advertising

Streaming media advertising format	explain
Video patch advertisement	Inserting advertisements in the video
Audio interstitial advertisement	Inserting advertisements into audio
Native advertising	Consistent with the content format
Interactive Advertising	Can participate in interactive advertising
Pop up advertisement	Pop up window advertisement
Targeted advertising	Personalized and precise push notifications

## 3. Current Situation of Financial Advertising Placement on Streaming Media Platforms

### 3.1. Limitations on Data Acquisition and Processing

When financial advertisements are placed on streaming media platforms, the acquisition and processing of data face many constraints. Due to the strengthening of personal

privacy protection laws and data security regulations, advertising publishers have encountered numerous obstacles in collecting and using user information, making it difficult for them to obtain comprehensive and accurate data resources. In addition, the data barriers and isolation between different platforms increase the difficulty of cross platform data fusion and mining, which in turn has a negative impact on the improvement of advertising effectiveness. The dominance of streaming media platforms over user data further compresses the ability of advertising publishers to obtain data, thereby

limiting their ability to conduct data analysis and personalized advertising.

### **3.2. High cost and low conversion rate issues**

When promoting financial advertising on streaming media platforms, promoters need to cope with the dual pressure of high costs and low conversion rates. These platforms often charge high prices for leasing advertising spaces, especially for financial advertisements, which are more expensive due to their targeting of specific user groups and precise targeting requirements. However, high investment does not always bring corresponding conversion results. Users often choose to skip or ignore these ads, resulting in lower click through rates and transaction rates. In addition, potential customers of financial products have strict requirements for security, trust, and information accuracy, and conventional advertising methods are difficult to arouse their interest, making it even more difficult to further improve conversion rates. Therefore, improving the efficiency of advertising placement to better match investment has become a key task.

### **3.3. Advertising frequency control and user fatigue phenomenon**

On streaming media platforms, financial advertising has encountered challenges such as frequency imbalance and user fatigue. The frequent display of the same advertising information can easily cause users' aversion, leading to a decrease in curiosity and even resistance towards the advertising content, which directly affects the effectiveness and brand image of the advertisement. Excessive advertising display not only fails to increase conversion rates, but may also prompt users to choose to ignore or skip ads directly, thereby reducing the impact of the ads. In addition, due to the lack of efficient frequency regulation measures, advertisers find it difficult to grasp the optimal frequency of advertising to achieve the best balance between advertising costs and benefits. This situation is particularly evident in the field of financial advertising, as financial products require a high level of trust and thoughtful consideration from users, and frequent advertising push may have the opposite effect.

### **3.4. Impact of Regulatory Restrictions and Data Privacy Protection**

On streaming media platforms, the placement of financial advertisements is facing legal restrictions and strict considerations for data privacy protection. With the gradual improvement of laws and regulations related to personal information protection and data security, countries have implemented stricter advertising policies, restricting the authority of advertising publishers to obtain, use, and communicate user information. For advertising publishers, this situation means encountering bottlenecks in executing customized advertising placements, making it difficult to accurately grasp user behavior habits and preference information. The requirement of compliance forces advertisers to invest more resources and energy to ensure that their advertising strategies are consistent with laws and regulations, thereby increasing the complexity of advertising placement. Meanwhile, the strengthened protection of user privacy has also led to a decrease in data transparency and the formation of data silos, which not only hinders data sharing and comprehensive analysis between different platforms, but also affects the accuracy and effectiveness evaluation of advertising placement. In the field of financial advertising,

building user trust is crucial, and this restriction on data acquisition and usage poses significant limitations on the impact of advertising and the development of marketing strategies.

## **4. Strategy Analysis of AI Optimized Streaming Media Financial Advertising Placement**

### **4.1. Data Acquisition and User Profile Accuracy**

Data acquisition and precise user profiling are key steps for AI optimization of advertising placement in the streaming finance field. With detailed data analysis and user profiling, advertising can achieve more precise targeted marketing, significantly enhancing advertising effectiveness and conversion rates. Streaming media platforms often hold a large amount of information resources, covering various aspects such as users' audiovisual preferences, search modes, device operation modes, access duration and frequency. In addition, the platform will also integrate external data resources, such as consumers' online shopping trends, social media interactions, etc., in order to expand data coverage. By integrating these multi-dimensional data, streaming media platforms can gain in-depth insights into users' personality traits, preferences, and behavioral patterns.

After collecting preliminary information, the artificial intelligence assistant will perform data preprocessing operations aimed at removing redundant duplicate data and correcting inaccurate information. Subsequently, systematically classify and organize this information. This process generally involves extracting key features of data from multiple perspectives, such as categorizing user viewing records into interest classes, defining ad click through frequency as behavioral tendencies, and so on. After processing, AI will draw a user profile. For example, when analyzing users' behavioral tendencies, if it is found that users frequently browse financial programs and search for information related to investment strategies, the system will label them as a group highly concerned about financial products and further refine their characteristics based on factors such as viewing time and interaction. In the process of building a user profile, it not only covers the analysis of users' basic static information (such as gender, age group, place of residence, etc.), but also delves into users' dynamic preferences and behavior trajectories.

The AI system will classify users based on their characteristics and assign corresponding identifiers to each type of user. These labels may cover types such as 'prudent investment users', 'consumers with high-risk preferences', 'short-term investors', etc. By relying on these classification tags, targeted advertising can be more precise, such as pushing low-risk investment product advertisements to "stable investment users" and displaying high return but equally high-risk financial products to "high-risk preference consumers". The system dynamically adjusts the user's profile by continuously monitoring their activity data on the platform. For example, if a user used to mainly browse educational programs, but recently frequently queries financial information, the AI system will automatically refresh the user's tags and feature descriptions to optimize the advertising placement plan. This dynamic adjustment mechanism ensures that advertising strategies can correspond in real-time to

users' actual needs and preferences. By integrating multiple sources of data through AI, the situation of data silos has been successfully broken, ensuring the comprehensiveness and dimensionality of user profile construction. This method not only reduces advertising investment, but also significantly enhances user attention and advertising conversion rates.

## 4.2. Advertising Content Optimization and Creative Generation

In the field of streaming financial advertising, the application of AI technology mainly focuses on two core aspects: content optimization and creative generation, with the goal of enhancing user interaction and improving conversion efficiency through personalized content. Through data analysis, natural language processing (NLP) technology, and content generation models, AI can create advertising information that better meets user needs.

The AI system creates personalized advertising copy based on user profiles and behavioral data. In the content creation stage, AI will comprehensively analyze diverse information such as users' interests, language habits, and online behavior, and then automatically create advertising content according to established templates. For users interested in financial products, AI will design a concise advertising copy that emphasizes investment returns and risk management, which is more targeted and can meet users' investment expectations. AI performs A/B testing by creating multiple ad versions and monitoring key metrics such as click through rates and conversion rates for different versions of ads. Through continuous testing and improvement, AI can autonomously select the most effective advertising version and carry out large-scale promotional activities. This optimization process can be described by the following specific formula to describe the effect  $CR$  of user click through rate:

$$CR = \frac{\text{Number of ad clicks}}{\text{Number of ad impressions}} \times 100\%$$

By utilizing innovative arrangement of multi-dimensional elements such as advertising copy, images, and audio, AI leverages the power of big data analysis to accurately identify the best advertising placement plan, effectively enhancing user click through rates and conversion rates. With advanced natural language understanding and emotion detection technology, AI systems deeply analyze users' communication environment and emotional fluctuations. When users immerse themselves in financial risk assessment programs, AI will automatically push professional and rigorous copywriting advertisements that perfectly match the content of the program and the audience's mood. If users are immersed in casual and humorous programs, AI will cleverly push lighthearted and humorous advertisements to enhance their favorability and advertising impression. Relying on generative AI technology, especially generative adversarial networks (GANs), advertising platforms can produce unique video advertisements that involve comprehensive optimization of images, animations, and copy. AI flexibly adjusts the duration and content of advertisements based on users' viewing history, preference types, and other factors, ensuring the attractiveness of advertisements and avoiding user aversion. In advertisements involving high-risk financial products, AI emphasizes visual guidance of images and

authoritative display of content.

The advertising content is intelligently arranged by AI through modular design technology. These modules cover various elements such as titles, body text, multimedia materials, interactive buttons, etc. AI analyzes user data and flexibly combines various modules to create unique and highly attractive advertising materials. For example, for users who pursue sustainable returns, AI will focus on recommending the "Stable Revenue Strategy" module; For users who are keen on high-risk and high return, AI will generate a "high return" module and quickly produce multiple advertising versions to achieve rapid updates. For users from different regions and cultural backgrounds, AI can intelligently adjust language and visual design to ensure that advertising content matches users' cultural preferences. With the help of natural language processing tools, AI can generate highly adaptable localized copy for users of different languages, and visual adjustment algorithms can optimize the color matching and design style of advertising images to ensure that the overall visual effect is coordinated with users' cultural aesthetics.

## 4.3. AI optimization of advertising and channel management

AI effectively achieves the rational allocation of advertising resources through precise targeting, intelligent content distribution, and dynamic adjustment strategies, greatly expanding the reach of target audiences and improving conversion efficiency. This system integrates numerous streaming media platforms and advertising publishing channels, intelligently allocating advertising budgets and optimizing advertising ratios based on users' viewing habits and preferences. The system uses the investment return rate of each channel as the benchmark for adjustment, reallocating the budget in real time, concentrating resources more on channels with higher return rates, while reducing the proportion of inefficient advertising.

In competitive advertising, AI uses its advanced machine learning algorithms to estimate the user's possible click behavior and conversion success rate, and then formulate the best bidding strategy. AI relies on past data to analyze potential returns and flexibly adjust bidding quotas, striving to achieve the best advertising results among the target audience while optimizing costs. During times of high user activity, AI will increase bidding, while during times of low activity, it will correspondingly reduce bidding to optimize conversion efficiency. In addition, AI continuously tracks the effectiveness of ad placements, including key indicators such as click through rates, impressions, and conversion rates. It automatically detects and adjusts underperforming ad content, adopting strategies such as adjusting budget allocations or creating new ad versions.

AI systems can automatically identify potential customers who have not yet completed transactions and trigger a series of re marketing strategies. By analyzing users' browsing trajectories in depth, it customizes advertising content that better meets their needs, thereby effectively improving conversion rates. AI will continuously optimize strategies based on the effectiveness of re marketing activities to ensure that every contact is full of value. In addition, AI can intelligently determine the timing and equipment for advertising placement based on user behavior, such as placing investment and wealth management advertisements during financial news periods or pushing financial product

introduction videos at night, in order to increase advertising exposure and user interaction. By integrating multi-channel data, AI can identify users' activity patterns on various platforms, achieve cross platform precise positioning and synchronous optimization of advertising placement, avoid advertising duplication and user resistance, and enhance user acceptance. With real-time monitoring and intelligent adjustment mechanisms, advertisers can continuously maintain optimal advertising strategies, significantly improving conversion rates and investment efficiency.

#### 4.4. User Privacy Protection and Compliance

In the AI optimization process of streaming financial advertising, protecting user privacy and ensuring legal compliance play a crucial role. In the process of using AI, it is necessary to find a balance between improving advertising effectiveness and protecting user privacy, and adopt appropriate technical measures to ensure data processing compliance and security, thereby optimizing user interaction experience. During the initial processing of data, AI anonymizes user information and desensitizes sensitive information to prevent the leakage of personal information. Data anonymization involves eliminating or obfuscating elements that can directly identify users, such as name, address, specific device identification code, etc., and transforming them into non directly identifiable forms. Sensitive information desensitization refers to masking or encrypting sensitive data such as transaction details to ensure the security of the data during transmission and storage. This approach not only meets the basic principles of data privacy protection, but also reduces the potential risk of privacy breaches. AI systems adhere to the principle of data minimization, only collecting, processing, and storing data directly related to advertising placement, avoiding the collection and storage of irrelevant information. By clearly defining the boundaries of data processing, the system not only meets advertising needs but also minimizes threats to user privacy to the greatest extent possible. The effectiveness of this strategy can be expressed by the formula of Data Minimization Implementation Rate (IMR):

$$IMR = \frac{\text{Processing data volume}}{\text{Total amount of available data}} \times 100\%$$

By reducing the IMR value, the scope of privacy information leakage can be significantly reduced, thereby enhancing compliance and protection in the data processing process. AI adopts privacy preserving computing methods, such as differential privacy technology, to add "noise" to data for interference. This makes it difficult to extract specific user information even if the data is stolen by external attackers, effectively achieving a balance between privacy protection and data statistical analysis accuracy. The storage and access process of data is strictly controlled and only carried out on encrypted servers that meet compliance standards. Access permissions must be approved and logged, and regularly reviewed and updated to ensure consistency with the latest

laws and regulations. The system strictly complies with international and local legal norms such as the General Data Protection Regulation (GDPR) and the California Consumer Privacy Act (CCPA), and collaborates with third-party privacy protection organizations to regularly undergo independent evaluations to verify its compliance. For sensitive data such as financial transaction information, AI systems adopt full encryption and distributed data storage methods to block unauthorized access, effectively protect user privacy, comply with legal regulations, and thus build a trust bridge between users and the platform.

## 5. Conclusion

The development of streaming media advertising in the financial industry has made AI optimization strategies particularly important. AI technology greatly improves the efficiency and accuracy of advertising through precise acquisition of data information, establishment of user profiles, automatic generation of creative content, and intelligent advertising and channel management. In this process, protecting user privacy and complying with regulatory guidelines are crucial. AI ensures information security and maintains user trust by implementing data anonymization, minimizing data usage, and adopting differential privacy strategies. The integration of AI technology greatly reduces the cost of advertising placement, significantly improves customer conversion rates, and promotes positive communication and trust relationships between advertisers and customers. With the continuous advancement of AI technology, the accuracy and personalization of streaming financial advertising will continue to evolve, injecting new vitality and higher economic value into the continuous progress of the market.

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