Data Driven Management and Control Model of Internet TV

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Abstract: Internet TV business is facing pain points such as scattered resources and lagging decision-making in the process of digital transformation. This article constructs a data-driven business management and control model, which integrates business analysis, project accounting, and dynamic resource allocation mechanisms to improve business operation efficiency. The research proposed a closed-loop framework of "data analysis decision optimization", combined with Internet TV user behavior data, content resource data and financial data, to verify the effectiveness of the model in cost control and revenue growth, and provide a replicable management paradigm for the industry.

***Keywords*:** data-driven management; business management and control; efficient allocation of resources; Internet TV; project accounting

1. Introduction

Under the dual drive of technology iteration and user demand upgrading, the Internet TV industry has continued to expand its market scale, but the accompanying problems such as content homogenization, declining user retention rate and rising operating costs have made the industry increasingly competitive. The traditional experience driven management model relies on subjective judgment and lacks quantitative basis, making it difficult to achieve precise resource allocation and operational efficiency optimization, especially in terms of dynamic resource allocation and real-time business analysis, which have significant shortcomings[1]. At present, although the application of data-driven management in the media field has made phased progress, there is still a lack of systematic management and control models for Internet TV business characteristics. This study aims to construct a data-driven control model that covers resource allocation, business analysis, and project accounting by integrating multiple data resources. By combining theoretical modeling with empirical analysis, it provides a replicable management paradigm for the industry and helps enterprises achieve cost reduction, efficiency improvement, and sustainable development.

2. Efficient resource allocation mechanism

2.1 Resource Classification and Evaluation System

The prerequisite for efficient resource allocation is to establish a scientific classification and quantitative evaluation framework. Explicit resources include quantifiable input factors such as bandwidth capacity, server computing power, content copyright procurement costs, etc. Their configuration efficiency directly affects user viewing experience and content distribution capabilities; Implicit resources include non quantitative indicators such as user stickiness and brand influence. Although it is difficult to measure directly, their value can be indirectly evaluated through user behavior data and market feedback[2]. Two types of resources need to be configured collaboratively: explicit resources provide basic support, while implicit resources determine long-term competitiveness. The evaluation system needs to balance efficiency and fairness, and balance short-term benefits and long-term development through weight allocation. For example, in content procurement, both copyright costs and the contribution of content to user retention should be considered.

2.2 Construction of Dynamic Configuration Model

The dynamic configuration model is data-driven and achieves real-time matching between resources and business requirements. A bandwidth allocation algorithm based on user activity, dynamically adjusting the bandwidth allocation of regional nodes by analyzing user viewing time periods, device types, and other behavioral data, to avoid peak lag and low valley resource idle; A prediction model for the return on investment of content, combined with historical click through rates, completion rates, conversion rates, and other data, quantifies the correlation between content investment and revenue, providing a basis for procurement decisions; Optimization design of advertising space auction mechanism, introducing bidding algorithm and user profile matching to improve advertising filling rate and accuracy, while adjusting resource allocation priority through price leverage. The three types of models together form a dynamic configuration system, ensuring

that resources are tilted towards high-value business areas.

2.3 Evaluation indicators for configuration effectiveness

The configuration effect needs to be quantitatively evaluated through multidimensional indicators[3]. The resource utilization index focuses on the efficiency of unit resource output, such as the user viewing time supported by unit bandwidth and the advertising revenue generated by unit server computing power, reflecting the conversion relationship between resource investment and business results; The response speed indicator measures the system's ability to adapt to changes in demand, including time delay control from data collection to decision execution, ensuring that configuration adjustments are synchronized with market fluctuations; The resilience index evaluates the efficiency of resource expansion, especially in sudden traffic scenarios, by pre setting resource pools and fast scheduling mechanisms to ensure service stability. The three types of indicators form a closed-loop feedback system, providing data support for the continuous optimization of the model.

3. Business analysis and project accounting system

3.1 Multidimensional Business Analysis Framework

Business analysis requires the construction of a three-dimensional evaluation system that includes users, content, and finance. The user dimension focuses on the lifecycle value and churn warning model, predicting long-term value through user behavior data and identifying potential churn users for early intervention; The content dimension adopts a three-level evaluation of click through rate completion rate conversion rate to quantify the attractiveness and commercial conversion ability of the content, providing a basis for content procurement and recommendation strategies; Balance the cost and long-term benefits of single user acquisition in the financial dimension, ensuring the synergistic optimization of user growth quality and profitability. Cross validation of three-dimensional data can comprehensively reflect the health of the business.

3.2 Project Accounting Standardization Process

Project accounting requires precise matching of costs and benefits. The cost allocation rules are broken down into three levels: business lines, products, and regions to ensure traceability of resource investment; The principle of revenue recognition is based on membership subscriptions, advertising, and value-added service types, matched with the accrual basis at the time of revenue realization; The calculation of the breakeven point clarifies the critical value of project profitability through dynamic analysis of fixed and variable costs. Standardized processes provide quantitative support for resource allocation decisions and avoid subjective judgment biases.

3.3 Data Visualization and Decision Support

Data visualization achieves transparency in business status by dynamically monitoring key indicators such as user growth, content popularity, and cost fluctuations through real-time dashboards; The scenario simulation function predicts profits based on different resource allocation schemes and assists in formulating optimal strategies; The warning system automatically identifies abnormal data, triggers an alarm mechanism, and pushes solutions. The three parties collaborate to build a "monitoring prediction intervention" closed loop, improving decision-making efficiency and risk prevention and control capabilities.

4. Implementation path and safeguard measures of the model

4.1 Phased Implementation Strategy

The implementation of the model follows a three-stage path of "pilot promotion optimization". During the pilot period, a single business line will be selected to verify the completeness of data collection, accuracy of algorithms, and effectiveness of decision-making, in order to reduce the risk of comprehensive promotion; Integrate data and processes across business lines during the promotion period, break down data barriers between user, content, and financial modules, and achieve large-scale application of the model in all business scenarios; The optimization period is based on real-time feedback and continuous iterative algorithm rules to ensure that the model adapts to business dynamic changes.

4.2 Organizational and Technical Support

Establish a cross departmental data governance committee at the organizational level to coordinate the development of data standards, authority management, and conflict resolution, ensuring compliance in data circulation; Building cloud computing and big data platforms at the technical level, supporting real-time processing of massive data and rapid deployment of models, while establishing a data security protection system; Establish a hierarchical training system at the personnel level to enhance the data literacy of all employees and provide organizational and technical support for the implementation of the

model.

5. Conclusion

The data-driven management and control model provides the Internet TV industry with a systematic solution for quantitative decision-making and dynamic resource allocation. Its core value lies in the integration of multi-source data and intelligent algorithm analysis, reducing the subjective bias of traditional empirical decision-making, and improving the accuracy and operational efficiency of resource allocation. The implementation of the model needs to overcome practical challenges such as data silos and insufficient algorithm interpretability, and requires continuous optimization through cross departmental collaboration and technological innovation. The deep integration of future models with cutting-edge technologies such as generative AI and reinforcement learning will further promote intelligent decision-making and resource flexibility. The industry urgently needs to build unified data standards and control specifications, lay the foundation for the large-scale application of the data driven model, and help the Internet TV business achieve high-quality development.

References

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