Research on Cost Control of Exhibition Advertising Based on Scheduling Plan

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Abstract. With the development and innovation of my country's market economy, advertising is playing an increasingly important role in the market, and the effective combination of advertising and exhibition marketing can greatly increase product sales and promote economic development. The purpose of this article is to study the control of exhibition advertising costs in the scheduling plan. In order to evaluate whether the scheduling is efficient and reasonable, this paper proposes an evaluation model of the exhibition advertisement scheduling plan with the best overall cost. This article focuses on the development of conference and exhibition advertising cost control based on the scheduling plan, and a stable dynamic advertising cost model established by the economic market to fully display advertising information to enterprises in related fields of the technology market, and at the same time release their needs, to obtain the optimal solution. The experimental results show that through short-term scheduling and scheduling, the cost of advertising in exhibitions can be dynamically controlled in real time and maximized in the pursuit of benefits, so as to achieve mutual benefit and win-win results for advertisers and enterprises.

Keywords: Scheduling Plan, Exhibition Advertising, Cost Control

1. Introduction

Advertising is an important part of marketing, and its role is indispensable. With the development of today's economy and the enhancement of market competitiveness, the advertising market continues to influence marketing concepts [1]. Excellent advertising strategy helps the company's development and marketing to meet the economic globalization era. And as a means of promotion, reports can guide consumers and increase sales. Advertisements can advocate green and healthy consumption concepts, which are beneficial to nurturing consumption. The author puts forward the concept of rational consumption [2]. Advertisements use modern communication technology to report with artistic flavor and bring artistic flavor to our lives. And advertising it can enhance the memory of consumers and
expand product sales [3].

Advertising media is used as a carrier to disseminate advertising information, and use the role of a carrier between the object and advertising in advertising to build a bridge between the relationship between producers and consumers [4]. As a new form of media, exhibition advertisements often appear in some large-scale exhibition advertisements in collective activities, exhibitions and conferences. It has played a role in product promotion, including large-scale conferences, expos, sports meets, exhibitions, festivals, and various Class exchanges Yi Jianlian and so on. Exhibition activities require complex organization and a wide audience. The exhibition advertisement should take the exhibition as the carrier and combine the activities of multiple media forms [5]. The primary pursuit of the exhibition scope report is novelty and the attitude of "dare to be the first in the world". The scope of the exhibition As the announcement strives to bring eternal effects in a short time, the advertising content must be creative, novel and associative [6].

In order to better achieve the purpose of the advertising campaign, we should summarize and analyze the previous activities in order to carry out a good exhibition. After paying attention to the sales of exhibition products and the effect of brand building, companies themselves need to formulate a thorough plan and take countermeasures. Exhibition marketing planning is a new economic phenomenon that has emerged in recent years [7]. With the increasingly diversified market development, the status of exhibition marketing is becoming more and more important. Conference and exhibition marketing is to attract customers, increase brand value and influence [8]. Through price, service, image design and promotion of a wide range of activities. Exhibition marketing using exhibitions to show your own products to consumers or peers can increase product sales, on the other hand, it can also increase brand effect [9]. We hope to give full play to the market mechanism while increasing the government's power to invest in venture capital. The government should formulate a series of preferential policies to guide the flow of market capital and support investors' innovation risks. Investment provides a more powerful and effective source of funds for the successful transformation of scientific and technological achievements [10].

2. Method

2.1. Data mining algorithm

Big data objects have the complexity of the data space distribution state, such as the size of the data space distribution, inconsistent distribution, etc. The distribution pattern of data objects of the same shape and different densities, by calculating the distribution density of data objects in the data space, determine the density attraction The point (extreme point) and the density of the data object attract the density of the point, so as to realize the effective aggregation of clusters of different sizes, shapes and densities, so as to realize the effective mining and analysis of large amounts of data.

2.1.1. Dynamic neighborhood radius

The reachable distance of dynamic neighborhood radius adaptive density is defined as:

$$R_i = R \frac{A_i}{A_{i+1}}$$ (1)
In the above formula, \( R \) is the reachable distance of the initial density, and \( A_i \) and \( A_{i+1} \) respectively represent the density values of the attraction points of two cluster density determined successively.

2.1.2. Data point density

The formula can be expressed as:

\[
\text{density} (x_i) = \sum_{j=1}^{n} \frac{d(x_i, x_j)^2}{2 \sigma^2}
\]  \hspace{1cm} (2)

In the above formula, the Gaussian function on the right represents the influence of each data point on the X point; \( \sigma \) is the density parameter, which determines the gradient of the density function.

2.1.3. Density reachable distance

It refers to any certain data object \( x \) in the data cluster space, and the distance between data \( R \), a circular area with certain data as the center and the data distance as the radius, corresponding to the reachable density distance field of the data object.

\[
R = \text{coef}R \times \text{mean} (D)
\]  \hspace{1cm} (3)

In the above formula, \( \text{coef}R \) refers to the adjustment coefficient of distance, and its coefficient value is greater than 0 and less than 1; \( \text{mean}(D) \) refers to the average distance of all data objects; \( D \) is the collection of data objects.

2.2. Cosine correlation analysis algorithm

Cosine similarity, also known as cosine similarity, evaluates their similarity by calculating the cosine of the angle between two vectors. Assuming that \( a \) and \( b \) are two different vectors, the cosine similarity calculation formula is:

\[
\cos \theta = \frac{a \cdot b}{|a||b|}
\]  \hspace{1cm} (4)

If the coordinates of \( a, b \) are \((x1, y1), (x2, y2)\), then the algorithm formula can be rewritten as:

\[
\cos \theta = \frac{x_1x_2 + y_1y_2}{\sqrt{x_1^2 + y_1^2} \sqrt{x_2^2 + y_2^2}}
\]  \hspace{1cm} (5)

Using the cosine correlation algorithm to express the relevance of the curriculum, the algorithm formula can be rewritten as:

\[
\gamma(C_i, C_j) = \frac{C_i \cdot C_j}{|C_i||C_j|}
\]  \hspace{1cm} (6)

Assuming that the courses are expressed as points on the coordinate system, it can be further derived:
2.3. Ingenious use of scheduling plan real-time analysis

All plans are uncertain. Under the current mass customization production model, the uncertainty of the plan has increased significantly. We must study new planning methods and tools. From a formal point of view, from short-term plans, medium-term plans to long-term plans, there are situations similar to the "butterfly effect". The longer the time, the greater the uncertainty and error of the plan. In the mass production mode, orders are basically determined; limited inventory can weaken the uncertainty of the supply chain; production planning can only consider the uncertainty of production. After entering mass customization, there are not one fan, but three, namely: order, supply chain, and production. The production planners in most factories still use the traditional production plan and only consider the uncertainty of production, which is obviously not enough. Therefore, it is not easy for a company to develop a mid- and long-term plan for a good company. There are some problems in all aspects. Therefore, the prerequisite for making a plan is whether you have the corresponding management and control capabilities for all aspects and resources involved in the plan. If there is no ability to make the above-mentioned projects self-adjust, this plan has no practical meaning. Planning must be linked to the implementing agency of planning instructions. No matter how many levels you plan, there must be a responsive plan execution unit in the company's organizational structure. If there is no effective implementing agency/person, this plan is meaningless. Therefore, the short-term scheduling plan is more suitable for small orders with multiple requirements such as advertising.

Therefore, we can use cosine algorithm combined with data mining algorithm to establish a model and analyze the fluctuation range of exhibition advertising cost under short-term scheduling to achieve its control.

3. Experiment

3.1. Set up two group controlled trials

We can choose an advertising company, accept several projects at the same time, and then set up two teams, and the two teams use long-term planning, medium-term planning, and short-term scheduling for these projects to analyze the costs, exhibition effects and final benefits of each advertising. This is to identify the method we should use. Of course, due to differences in personal abilities, there may be slight errors in the results, so we need to analyze more cases to get the general situation. Subsequently, we can use the two algorithms introduced above to analyze and uniformly analyze the same case one by one, and finally determine the cost of the exhibition advertising and how to maximize the benefits.

3.2. Get the audience's attitude to reflect the problem

Exhibition is a key part of corporate profitability. The foundation of sustainable development. Enterprises need to establish a good corporate image. Propaganda through public relations activities and exhibition activities helps to establish a good corporate image. In the promotion, the main products can be promoted to achieve the purpose of product sales. This has become the focus of the industry’s common concern. If you want to hold an exhibition well, you must respond to the audience
and come up with a plan to publicize it to the masses. This is the focus of the plan. The audience can be divided into consumer audience, professional audience and general audience. If the plan is done well, the audience will also have great commercial value. Always contact the masses, get to know the masses in depth, and grasp their needs. When planning work, scientific propaganda should be done, and the propaganda time should be divided into time periods. There must be free time, and the publicity work must continue to produce good results. Therefore, we should finally control the exhibition advertising cost based on the scheduling plan and have achieved the optimal solution.

4. Results

4.1. About the fluctuation of the cost of using different plans in the scheduling plan

We explored the general situation by using different planning time spans and methods. The conclusions are shown in Figure 1 and Table 1.

![Figure 1. Comparison of results obtained by the length of planning time](image)

It can be seen from Figure 1 that in terms of the time span of exhibition advertising planning, the shorter the planning time distance, that is, real-time updates and changes are made. At this time, funds can be fully deployed, and the best results will generally be obtained in the end. Because long-term planning generally takes a lot of time to predict and explore the future expected planning of the overall goal, starting from the overall situation, not the success or failure of the subsections, just like Go, you can make mistakes in details or let it go, but in Generally speaking, we should be at an advantage, so there may be short-term disadvantages at this time, but this is within a controllable state and is acceptable, but this is for projects such as advertising that provide more conditions but a small number of customers. Long-term planning is unreasonable, so short-term scheduling should be adopted to implement regulation to obtain the optimal solution.

Table 1. Different uses of algorithms for cost control and its final profit
| Data mining algorithm | Expected planning funds, number of adjustment s and revisions | use of funds | expected effects of exhibition distance | final profitability |
|-----------------------|---------------------------------------------------------------|--------------|----------------------------------------|--------------------|
| 100% 12               | 94%                                                           | 92%          | 210%                                   |
| Cosine correlation analysis algorithm | 100% 15 | 92% | 90% | 200% |
| Comprehensive analysis | 100% 6 | 86% | 108% | 260% |

It can be seen from Table 1 that the implementation of the data mining algorithm and the cosine correlation analysis algorithm will lead to the minimization of costs and the maximization of profits, because data mining can obtain the exhibition information and the information of the participants, know their preferences and then analyze Advertising content, and the cosine correlation analysis algorithm can integrate various information such as participants and organizers, and finally get the optimal solution. Therefore, we should try to use a variety of methods to analyze the optimal solution.

4.2. About the implementation of the scheduling plan

When the production plan changes, it is very important to strengthen scheduling management, understand and master the production schedule in time, analyze various factors that affect production, and take corresponding countermeasures to provide customers with satisfactory products. So we first receive and analyze the production plan change notice, and locate the link that needs to be changed. If the planned production quantity of a part changes, the warehousing and inspection related to the production of the part must be adjusted accordingly. After the plan is changed, promptly supervise the storage department, tooling design department, production department, etc. to prepare for the new production plan. Then according to the plan, increase or decrease the number of assigned labor force. When it is necessary to increase production personnel, the amount of labor and the jurisdiction of the "all-rounder" should be increased as much as possible to achieve the purpose of increasing production capacity. Based on the changed production schedule. This is the basic principle of scheduling management, which means that the scheduling business should be carried out around the completion of planned tasks. Highly centralized and unified. The production scheduling work must unify the command objectives and management, ensure the consistency of actions, and generate the greatest synergy. And it is necessary to plan to prevent the occurrence of dispatching work, which is also the most important part of dispatching management work. Planners can only take the initiative in scheduling work if they do a good job of planning and preparation before production, avoiding all kinds of inconsistencies, and achieving "preservation before and after". For example, my country's
National Grid. At present, my country's smart grid dispatching control system dispatch plan application has built a closed loop iterative system of unit combination, economic dispatch, and safety inspection, which can comprehensively supervise and guarantee the safety of grid dispatching work. Quantify safety inspection work, meet the requirements of the safe operation of the electricity market mechanism, and strive to build a safety inspection system that adapts to the complex grid structure and constantly updated grid technology, eliminate the security risks in the smart grid, and maintain the stability and normal operation of the smart grid system.

4.3. About the cost control of exhibition advertising

The cost control of the project should follow the principle of "comprehensive control, dynamic control, target management, and combination of responsibility and power". After signing the contract, the project department will proceed to decompose the advertisement according to the approved target cost and reach the relevant responsible department as the cost target of the project. The project manager department adopts "pre-work budget and work inspection" according to the specified cost target. Project cost management "calculate, do what you do", and all staff participate in the implementation of the whole process of cost control; strengthen the basic work of project cost management, establish a healthy cost management system, implement various rules and regulations, and implement management responsibilities; strengthen consumption Quota management, so as to have consumption basis and expenditure standards, strictly control project costs and expenditures. The project management department organizes a cost analysis meeting at the end of each month to conduct a comparative analysis of the target cost, budget cost and actual cost of the implementation of the project this month, find out the reasons for the analysis of the deviation, formulate measures to reduce costs, and summarize experience guidance Follow-up work to ensure the realization of the total project cost target. At this point, in the analysis process of each link, the results of algorithm simulation can be used, and the occurrence of various uncontrollable factors can be considered, and finally a comparison can be made to control the cost.

5. Conclusion

Although advertisements are creative and innovative, they are unique and can attract consumers' attention, but the advertising strategies are formulated after scientific analysis in accordance with actual theoretical conditions. The advertising strategy is not perfect. Knowing that the company's exhibition marketing is just an immature advertising plan, it lacks systematic and comprehensiveness. Our definition of the convention and exhibition economy is that it takes the economic factors in the convention and exhibition activities as the main body, and takes development as the center. The development of industries and the development of emerging economies are accompanied by the common development of surrounding industries. But no matter how good the measures are envisaged, they must be implemented in earnest. Only by establishing a management system that combines responsibilities, powers and benefits can good results be achieved. The core of exhibition advertising cost control based on the scheduling plan is to establish the responsibility and organization system of the project manager, be responsible for the overall interests of the company, and coordinate the responsibilities, rights, and interests with the public. The unification of the results obtained the desired results. For better market development and profitability, we can only achieve cost control through scientific implementation of regulation. In the future, we will work harder to solve this problem,
innovate in practice, and pursue the limit.

References

[1] Meng L, Zhou X. (2019) An integrated train service plan optimization model with variable demand: A team-based scheduling approach with dual cost information in a layered network[J]. Transportation Research Part B: Methodological, 125(JUL.):1-28.

[2] Liu L L, Wan X, Gao Z, et al. (2019) Research on modelling and optimization of hot rolling scheduling[J]. Journal of ambient intelligence and humanized computing, 10(3):1201-1216.

[3] Zhu K, Lu N, Zheng J, et al. (2019) Optimal day-ahead scheduling for commercial building-level consumers under TOU and demand pricing plan[J]. Electric Power Systems Research, 173(AUG.):240-250.

[4] Tomoo K, Kazuo N, John S. (2018) Span of control, transaction costs, and the structure of production chains[J]. Theoretical Economics, 13(2):729-760.

[5] Zirnstein M, Van Hell J G, Kroll J F. (2018) Cognitive control ability mediates prediction costs in monolinguals and bilinguals[J]. Cognition, 176:87-106.

[6] Howard D B, Thé, Jesse, Soria R, et al. (2019) Health benefits and control costs of tightening particulate matter emissions standards for coal power plants-The case of Northeast Brazil[J]. Environment International, 124:420-430.

[7] Duan H, Zhang G, Wang S, et al. (2018) Balancing China's climate damage risk against emission control costs[J]. Mitigation and Adaptation Strategies for Global Change, 23:1-17.

[8] Ueda T, Ban H. (2018) Active Learning on Digital Marketing for Advertising A University Museum Exhibition[J]. Procedia Computer Science, 126:2097-2106.

[9] Fenwick S. (2018) Exhibition Wi-Fi: Best in show[J]. Land Mobile: Wireless Communications for Businesses, 25(2):25-27.

[10] Prabhakar M K. (2019) Ferraro SPA to showcase latest innovations in finishing[J]. The Textile Magazine, 60(7):140-141.