

# Application of Cost-Benefit Analysis in Economic Management

—Taking the Energy Saving and Environmental Protection of Hotel and the Mattress Configuration Management as an Example

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**Abstract**—Enterprise managers of non-economic background are difficult to use mathematical models and quantitative methods, so it is difficult to use cost-benefit analysis method in economic management. However, taking the hotel energy-saving, environmental protection and bedding disposition management as an example, it can be explained that if we take the concept of cost system management and cost-benefit concept. The cost and benefit can be analyzed by using the common statistical method, and the cost-benefit analysis can also be carried out in economic management. It further proves that it is possible and necessary to liberate economic theory from economists and enable business managers to apply it in economic management.

**Keywords**—cost-benefit analysis; cost-benefit analysis method; cost system management; economic management; modern economics

## I. CASE INTRODUCTION

The case in this paper is based on our hotel survey. Questions asked during the survey relate to the circumstances under which customers use hotel air conditioning. Many customers reflect that even in spring and autumn, when the bedding is thick, they have to turn on the air conditioner when sleeping in the hotel; when the bedding is thin, they have to turn on the heating. In summer, customers turn on the air conditioner more because of the thick bedding; in winter, when the bedding is thin, they turn on the heating more. In this regard, hotel managers believe that if the hotel is equipped with too many kinds of bedding of different thickness, it will increase the cost of the hotel. And different customers have different needs for the thickness of bedding, which makes it difficult for hotels to manage. Accordingly, our additional follow-up survey reflects: The main reason why the above phenomena of power consumption can't be properly handled is that the relevant managers unilaterally emphasize avoidance of expenditure, fail to conduct comprehensive, systematic and comprehensive analysis and Research on cost management, and are confined to the traditional concept of cost management. This requires changing concepts, establishing cost-benefit concepts, and applying cost-benefit analysis method based on the concept of cost system management, in order to find solutions to the above problems.

## II. THE BOTTLENECK OF ENTERPRISE MANAGER'S APPLICATION OF COST-BENEFIT ANALYSIS IN ECONOMIC MANAGEMENT

In the above cases, the traditional cost management concepts affecting hotel managers mainly focus on reducing expenditure, thus falling into the narrow concept of simply managing costs for reducing costs, which can't provide the correct information needed for forward-looking decision-making. Traditional cost management concepts in cost management often only focus on the management of production costs, ignoring other aspects of cost analysis and research. This requires hotel managers and other business managers to use cost-benefit analysis in economic management.

In modern economic theory, the so-called cost-benefit analysis method is to use certain technical methods to calculate all costs and determine all possible benefits in various alternative schemes, and then integrate the costs and benefits to make a reasonable analysis in order to select the most advantageous scheme. After World War II, the United States infiltrated cost-benefit analysis into government projects in a large number, which is a sharp weapon to seize the opportunity to promote rapid economic development. Since the 1960s, this method has gradually become popular all over the world. At first, the cost-benefit analysis method was mainly used in the decision-making of investment projects, and then gradually applied to other related aspects. However, for the general business managers, if they are not from an economic specialty, it may be difficult to use mathematical models and quantitative methods in the economic management of their own units, and they will encounter problems such as the difficulty of quantifying benefits, which is the bottleneck of the cost-benefit analysis method used by business managers in economic management. Cass R Sunstein, a well-known American scholar, called the United States a "country of cost-benefit analysis".[1] Even in some major projects sponsored by the U.S. government, "cost-benefit analysis usually lacks quantitative data"[2]and "quantification of certain costs or benefits is difficult to achieve"[3]. There are many ways to make up for this, one of which is to "debate the cost and benefit of the project"[4], and "debate" needs to be based on relevant theories.

Therefore, in the economic management of enterprises, if they can't use relevant mathematical models and quantitative methods, they can reasonably analyze the cost and benefit by integrating the concept of cost system management and cost-benefit concept on their own basis of relevant theories. In this process, it is necessary to use common statistical methods, but also in economic management cost-benefit analysis, to strive for the correct decision-making, so as to avoid possible losses.

In modern economic theory, the concept of cost-benefit emphasizes the necessity and rationality of "input" through the comparative analysis of cost and benefit, or between "input" and "output", so as to create as much "output" as possible with as little "input". As long as the increase of "input" can bring about greater "output", then this kind of "input" is in line with the concept of cost-effectiveness. When considering cost and benefit as a whole, we should not only see the cost and benefit of material form, but also the cost and benefit of non-material form, such as environmental cost, human resource cost, capital cost, service cost, property right cost, decision-making cost and its benefit. As for the concept of cost system management, it regards cost management as a system engineering, emphasizing the whole and the whole, paying attention to the comprehensive analysis and research of cost management in an all-round way, avoiding paying attention to only part of the cost management and ignoring other aspects of cost management.

### III. IDENTIFYING STRATEGIES FOR OPTIMIZING COST-EFFECTIVENESS

In the above cases, based on the analysis of cost and benefit, we can determine the strategy of optimizing cost and benefit by examining whether the expenditure is necessary and reasonable from the following aspects.

#### A. Rational allocation of bedding can save electricity and protect the environment, which has both economic and social benefits.

According to the "Development Report of China's Big Accommodation Industry in 2018"<sup>[5]</sup> and the data provided by China Tourist Hotel Network<sup>[6]</sup>, the total number of accommodation facilities in China is more than 450,000, while the average annual power consumption of hotels in China is more than 10 times that of residential buildings in ordinary cities, so the power consumption of hotels is enormous. On the other hand, the average energy expenditure of domestic hotel industry accounts for 8-15% of the operating expenses, while the international level is maintained at 6-8%. Therefore, the domestic hotel industry has a large space to save energy costs.

At present, the proportion of thermal power generation is still relatively large. Expanding the production of electric power means causing atmospheric pollution and greenhouse effect, affecting the growth of crops, and even threatening the survival of human beings. Therefore, the awareness of energy saving and environmental protection has been paid more and more attention all over the world. The expansion of electricity production also means that more non-renewable resources, such as coal, oil and natural gas, should be demanded. Saving electricity is conducive to reducing the consumption of limited

resources. According to data, China's electricity consumption is second only to that of the United States, ranking second in the world. However, China's energy resources are relatively poor, and the waste of electricity due to energy saving and weak awareness of energy saving accounts for a considerable proportion. Therefore, saving electric energy is not only an important way to protect the environment, but also an important means to promote the transformation of China's economic growth mode from extensive to intensive, and to achieve sustainable economic and social development.

The large amount of energy consumption in hotels in our country makes people realize that it is necessary to make efforts and pay for saving energy consumption in hotels. In the above cases, reasonable distribution of different thickness of bedding can save electricity and protect the environment, which is conducive to the establishment of green hotels and promote the sustainable development of hotels.

In the above cases, according to the concept of cost system management, it is worthwhile to increase the expenditure on bedding allocation, but to save more on electricity consumption, especially to achieve social benefits in environmental protection. We can also compare and weigh the difference between taking measures and not taking measures in the allocation of bedding. We can also weigh the impact of not spending or investing. It can be recognized that some hotel managers are unwilling to "increase expenditure", which makes the hotel unable to solve the problem of bedding allocation, thus causing unnecessary power consumption. Therefore, before starting cost-benefit analysis, it is very important to understand the cost status quo, and the pros and cons of each investment or non-investment need to be compared and weighed.

#### B. It is necessary to study reasonable bedding disposition scheme and explore corresponding management measures.

To study and design reasonable schemes and to explore and implement corresponding management measures, we need to invest human, material and financial resources, but this investment is worth it. In the research program and exploring management measures, the concrete steps of applying cost-benefit analysis method are as follows: based on the concept of cost system management, the total cost and benefit of a project are compared. According to a certain expenditure target, several schemes to achieve the goal are put forward, and the cost and benefit of each scheme are calculated. Through comparison, the relationship between cost increase and decrease and income increase and decrease is analyzed to evaluate project value, especially to correctly evaluate the cost and benefit which is difficult to quantify, and to select the optimal decision-making scheme.

Therefore, in the above-mentioned Hotel survey, we have explored such a scheme, that is, to increase the types of bedding with different thickness, but each kind of bedding does not need to be matched according to the whole bed (for example, only 70% of the whole bed). When in use, the hotel can match two or three bedclothes of different thickness according to the temperature at that time. In different floors or guest room areas, each room only matches one of them. For

example, according to the temperature at that time, the medium-thickness bedding accounted for 60% of the bed, the thicker one accounted for 20%, and the thinner one accounted for 20%. Although the thickness of bedding can be better adjusted according to the temperature due to the increase of the types of bedding, the hotel can also leave part of the bedding mobile, allowing customers to exchange. Of course, there are certain conditions and corresponding systems for customers to apply for the replacement of bedding of different thickness. Using the above cost-benefit analysis, through investigation, calculation and comparison, this optimal decision-making scheme is selected.

#### C. It is also necessary to adapt to the needs of customers

The choice and exchange of bedding services provided by hotels can't only save electricity and protect the environment, but also improve the comfort and satisfaction of customers, enhance the hotel's popularity and occupancy rate, so as to achieve greater social and economic benefits. Although these can't be quantified immediately, they are obviously positive energy. Therefore, in the above-mentioned investigation, research, design, exploration and implementation of management measures, despite the cost incurred, but it can ensure the correctness of decision-making.

#### D. It is necessary for hotel management departments to take measures to unify management

As mentioned earlier, power saving is also an important means to promote sustainable economic and social development and an important way to protect the environment. Therefore, it is also necessary for tourism management departments or hotel management companies to explore and implement the corresponding programs and measures. For example, on the basis of publicizing environmental protection awareness, we can regularly count and compare the "average electricity consumption per person" or "average electricity consumption per square meter per year" of the customers in each hotel according to the type or star level of the hotel, summarizes the experience and lessons, and put forward solutions or promotion experience. On this basis, according to the statistical data, the hotels are ranked, rewarded and punished, incentive mechanism is established, and the hotels are encouraged to save electricity by the reasonable allocation of bedding and other means. For example, the use of networked hotel management companies or chain hotels to establish dynamic files of customer members' demand for bedding thickness, in order to actively cater to customer needs, and better save electricity. In doing so, it is worthwhile to invest a

certain amount of manpower, material resources and financial resources. These expenditures can't be avoided. This concept of cost-benefit embodies the idea that "spending money is for saving money". That is to say, in order to reduce expenditures in the long run and in large quantities or to achieve real income in the future, some seemingly high expenses should be expended, which is the embodiment of the concept of cost-benefit.

#### IV. CONCLUSION AND REVELATION

In the application of cost-benefit analysis in large investment projects, certain technical methods, especially quantitative methods, must be used. If business managers are economically and other related professional background, if they can use relevant quantitative methods and mathematical models, they can better use cost-benefit analysis method. However, from the above cases, it can be seen that non-economic professional business managers use the concept of cost system management and cost-benefit concept to make a rational analysis of costs and benefits by using common statistical methods as far as possible. It can also carry out cost-benefit analysis in the economic management of the unit, strive for correct decision-making, obtain greater benefits and avoid possible losses. Thus, it is possible and necessary to liberate modern economic theory from economists and enable business managers to apply it in economic management.

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