

# Research on the Project Intelligent Financial Expenditure Control of R&D Department of High-Tech Enterprises under the Guidance of Performance

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**Abstract:** In order to improve the expenditure performance management, give full play to the enthusiasm of the R&D project expenditure activity departments involved in high-tech enterprises, carry out special project budget expenditure accounting, budget management and performance appraisal for the expenditure activities involved in specific construction projects, and enhance the scientific of management, this paper explores the establishment of a performance guidance framework for the financial control of R&D projects in high-tech enterprises, This paper expounds the construction process and implementation steps of the financial procedure framework of R&D project expenditure, and uses the dynamic standardized management method of expenditure to improve the level of expenditure control and budget performance evaluation, so as to further enhance the scientific management of R&D project expenditure.

**Keywords:** R&D project expenditure, R&D responsible unit, expenditure standard, performance guidance.

## 1. Introduction

Due to the fierce market competition, many high-tech enterprises carry out new product and new technology research and development in the way of project management of business division. Through the intelligent financial system, we can control the expenditure of specific R&D projects and provide the basis for the follow-up performance evaluation. The responsible unit of R&D project is one of the tools used for the control and management of expenditure activities in budget expenditure management. It is the responsible unit that collects and distributes expenditure activities, and controls and assesses the project budget expenditure. The responsible unit of R&D project is only responsible for the controllable capital expenditure within its scope of responsibility.[1] The functional departments that generate controllable capital expenditure can establish the responsible unit of R&D project, and finally form a centralized management and responsible unit at all levels. It is an effective way to strengthen financial management to establish R&D project responsibility unit and carry out budget preparation, implementation, control and assessment around R&D project responsibility unit.

On the one hand, the responsible unit of R&D project is conducive to financial fine management, promoting accurate policy implementation, and ensuring the R&D performance involved in R&D project. Build a multilevel R&D project responsibility unit, and comprehensively sort out the budget expenditure of R&D projects involved in R&D projects with the help of front-line staff's understanding and grasp of R&D projects involved. This paper calculates the budget expenditure of R&D projects involved in actual R&D projects, deeply analyses the structure of budget expenditure and its influencing factors, and reasonably constructs the standard system of expenditure quota. The expenditure standard is used to prepare and decompose the budget, the expenditure standard and the actual project budget expenditure are calculated through certain procedures, and the difference between the project budget expenditure is analysed, so as to improve the budget method more accurately, make the budget more in line with the actual R&D expenditure activities involved in the R&D project, and improve the refinement level of financial management, Better guarantee the performance of R&D related to R&D projects.

On the other hand, it is conducive to optimize the expenditure control and improve the efficiency of project budget funds. In the construction of R&D project responsible units, through the detailed accounting and analysis of the R&D project budget capital expenditure involved in each R&D project, we can more clearly understand the key points of R&D expenditure control involved in each R&D project, control the expenditure from the process of the project budget capital expenditure, from the source, process and cost of the project budget capital expenditure. In order to further reduce the budget expenditure of R&D projects, we should grasp the causes of the budget expenditure of R&D projects and the ideas of reducing the budget expenditure of R&D projects, improve the operation means, improve the work efficiency, and take energy saving and consumption reduction measures. The implementation of the expenditure standard method can refine and decompose the expenditure standard indicators to reach the responsible units of each sub R&D project, implement the responsibility fund management department system, carry out the accounting of the responsible fund management department, and implement the responsibility of expenditure control management of expenditure activities to each responsible unit of sub R&D project, so as to make the rights and responsibilities between departments more clear. It is conducive to optimize the budget performance evaluation mechanism and improve the use efficiency of project budget funds..

## **2. To Build a High-Tech Enterprise R&D Expenditure Control System**

### ***2.1. Use the Standard Work Project Expenditure Project Budget Capital Expenditure Theory to Build the Responsible Unit of R&D Project***

The R&D project responsibility unit must have corresponding standards for the assessment and control of project budget expenditure, and the standard expenditure method provides theoretical support in this aspect. The standard expenditure method is developed from the work item expenditure project budget fund expenditure method. The traditional project budget fund expenditure method takes indirect expenditure activities as the object, and follows the basic principle of "dynamically adjusted R&D expenditure control project work quota deviation from the actual expenditure in the tolerable deviation range". It can be summarized into two processes: first, through the confirmation and measurement of the standard quota of the expenditure activities such as the R&D expenditure control of high-tech enterprises, the expenditure activities such as the R&D expenditure control of high-tech enterprises are collected into the specific work quota; Secondly, through the confirmation and measurement of the work quota standard quota, the budget capital expenditure of work items is collected into the final product or service. The standard expenditure rule is to introduce the expenditure standard into the work item expenditure project budget capital expenditure method. It takes the formulation of expenditure standard as the starting point, calculates the actual project budget capital expenditure based on the work quota, systematically and strategically controls the project budget capital expenditure, and timely takes reasonable measures for the project budget capital expenditure. Finally, a rigorous expenditure standard application process is formed.

The basic idea of the standard expenditure method follows the principle of "confirming the direct project budget expenditure-allocating the indirect project budget expenditure according to the standard quota of the project budget expenditure-calculating the project budget expenditure with unit change". The unit variable project budget capital expenditure[2], which is composed of the unit direct project budget capital expenditure and the unit indirect project budget capital expenditure involved in a certain R&D project, is the R&D expenditure standard involved in the R&D project, and can be directly applied to the expenditure quota standard.

### ***2.2. Expenditure Quota Management Based on Standard Expenditure Method***

The basic idea of the standard expenditure method follows the principle of "confirming the direct project budget expenditure - allocating the indirect project budget expenditure according to the standard quota of the project budget expenditure-calculating the project budget expenditure with unit change". The unit variable project budget capital expenditure[2], which is composed of the unit direct project budget capital expenditure and the unit indirect project budget capital expenditure involved in a certain R&D project, is the R&D expenditure standard involved in the R&D project, and can be directly applied to the expenditure quota standard.

The first step to adopt the mode of R&D project responsibility unit is to establish the director of R&D project responsibility unit. In the first stage of budget preparation, according to the

responsibilities of the subordinate R&D project responsible units, the contents of economic activities and the R&D development and daily operation of the R&D project in the previous year, the director of the R&D project responsible unit analyzes the fund demand of the next year according to the principle of availability, and decomposes the budget data into the R&D project responsible units, Fully discuss and internal review the possible differences, and prepare the annual budget draft.

In the second stage of budget preparation, the R&D departments of high-tech enterprises review the annual budget draft, hold budget work meetings, make overall arrangements according to the budget indicators of the units, and reasonably adjust the budget draft of the responsible units of R&D projects [3]. In the process of preparation, the R&D departments of high-tech enterprises should fully solicit the opinions of the heads of the R&D project responsible units and the heads of the R&D project responsible units, so as to play a good coordinating role and minimize the deviation between the budget and the actual situation. If it is really necessary to adjust the budget due to special circumstances, the responsible unit of the R&D project shall timely apply for additional project budget funds, specify the plan for the use of funds, and obtain the examination of the R&D Department of the high-tech enterprise and the approval of the budget management committee.

The director of the responsible unit of R&D project is responsible for all the expenditure activities of the responsible unit of R&D project. Generally, the director of the responsible unit of R&D project has certain autonomy within the limit, and arranges the project budget funds economically and reasonably without exceeding the budget limit in advance with sufficient budget. By using the expenditure standard method, the responsible unit of R&D project matches the post responsibility with the budget execution responsibility, and implements the first responsibility of budget execution of each post. Regular and fixed expenditure activities shall be handled first after being approved by the director of the responsible unit of R&D project [4], and shall be reviewed by the R&D Department of high-tech enterprise when performing the reimbursement procedures afterwards. Other expenditure activities shall be prelim reviewed by the person in charge of the R&D project responsible unit and the person in charge of the R&D Department of the high-tech enterprise.

### ***2.3. Accounting Procedures of Fund Management Department under the Control Mode of R&D Expenditure of High-Tech Enterprises***

Under the control mode of R&D expenditure of high-tech enterprises, the fine accounting of project budget capital expenditure involves the division of the nature of project budget capital expenditure, the determination of the ownership of project budget capital expenditure and the allocation of project budget capital expenditure activities, which requires the personnel of fund management department to audit the authenticity and integrity of relevant documents of capital expenditure[5], Pay attention to collect and sort out the necessary project budget capital expenditure accounting information, such as the number of staff, operation time, R&D amount involved in the R&D project.

For the reimbursement of the internal vehicle expenses, travel expenses, equipment maintenance expenses and other expenses that can be collected to the responsible units of specific R&D projects, the standard method of expenditure is adopted, and the personnel of the fund management department directly record the expenses to the responsible units of R&D projects, and all uncontrollable capital expenditures do not need to be recorded to the responsible units of R&D projects.

The indirect expenditure activities are calculated by the method of work project expenditure and project budget fund expenditure. During the month end closing, the staff of fund management department package and allocate the indirect expenditure activities to the responsible units of R&D projects according to the allocation rate of project budget fund expenditure, so as to improve the accounting efficiency [6]. The calculation method of the allocation rate of project budget capital expenditure is determined by the standard quota of project budget capital expenditure. Under the standard expenditure method, the accounting treatment is recorded by the actual project budget expenditure, the work project expenditure project budget expenditure method is used to process and analyse the project budget expenditure data, and the expenditure standard method is used to analyse the changes and differences of the project budget expenditure.

At the end of the semester, the end of the year or the end of the academic year, the R&D departments of high-tech enterprises compare the actual project budget expenditure and expenditure standards, and analyse the differences between them in detail [7]. The difference analysis of project budget expenditure mainly focuses on the difference amount and difference rate, setting quantitative indicators, focusing on the causes of the difference, discussing how to achieve expenditure control and

evaluating whether the implemented expenditure control measures are effective.

The R&D departments of high-tech enterprises should regularly review the budget usage of the responsible units of R&D projects, point out the problems existing in budget management, analyse the differences between actual expenditure activities and plans, and carry out budget performance evaluation on the responsible units of R&D projects under the condition of ensuring the normal development of R&D projects. Finally, a clear division of labour, mutual coordination and clear responsibility management system will be formed between the fund management department and the R&D department involved in the R&D project.

### **3. Financial Control Procedure of Expenditure of Responsible Unit of R&D Project**

Only by establishing an appropriate financial management mode, standardizing the R&D process involved in R&D projects, strong budget control and effective supporting incentive measures, can the budget responsibility be truly implemented. The R&D departments of high-tech enterprises should revise the existing financial management system, comprehensively consider the organizational structure of the R&D departments involved in the R&D projects and the R&D planning involved in the R&D projects, improve the budget management process and the accounting system of the fund management departments, and consolidate the rights and responsibilities of the relevant departments into the system and process, To lay a foundation for the overall promotion of budget R&D project responsibility units.

On the one hand, accurate and reasonable expenditure standards need to reflect the types of expenditure activities such as R&D expenditure control of high-tech enterprises and the number of expenditure activities such as R&D expenditure control of each high-tech enterprise in the whole process of R&D involved in a R&D project. It requires the staff of the fund management department to cooperate with the front-line staff of the responsible unit of R&D project to understand the necessary R&D activities involved in the R&D project, the demand of R&D expenditure control and other expenditure activities of high-tech enterprises, and the reasonable market price of R&D expenditure control and other expenditure activities of high-tech enterprises, so as to make the expenditure standard more scientific and practical. On the other hand, the use of standard expenditure method in the R&D expenditure control mode of high-tech enterprises is a remodelling of the past extensive expenditure control management concept, which requires the overall cooperation between the fund management department and the R&D department involved in the R&D project. The expenditure standard calculated under the standard expenditure method is not short-term and static, but is constantly adjusted with the actual R&D expenditure activities involved in R&D projects. The R&D departments of high-tech enterprises should play a leading role, strengthen the management guidance to the responsible units of R&D projects, promote them to establish standardized process management and expenditure control management, smooth information sharing and communication channels, constantly improve the R&D expenditure standards involved in various R&D projects, and prepare comprehensive budget plans on this basis.

The data of budget expenditure of the project under the standard expenditure method is huge and the accounting method is complex. It needs to provide support for fine accounting through the efficient information management system platform. The expenditure control management system of R&D departments connected with the R&D projects should be considered. The management process, department responsibilities and system specifications of "R&D project performance" should be solidified into the system to realize the communication and sharing of information, so as to make the front-line operation data transmit in real time and improve the timeliness of information of capital management department. Through a complete data system and stable operating system, the real-time monitoring of actual project budget fund expenditure and planned project budget fund expenditure can realize the docking between the comprehensive budget management system and the budget implementation of the project budget funds and expenditures, and continuously improve the budget management level.

Under the good atmosphere of deepening the awareness and responsibility consciousness of budget funds and responsibilities of R&D departments involved in R&D projects, the R&D institutions of high-tech enterprises should take the management perspective into the long term and integrate the comprehensive budget management system of project budget funds expenditure through the R&D project responsible units. The comprehensive budget management system based on the responsible unit of R&D project includes the following points: first, the budget preparation adopts the dynamic

preparation method of combining top-down with bottom-up. The budget preparation is conducted from top to bottom by the R&D project responsible unit, R&D business department of high-tech enterprises and budget Management Committee. Finally, the final budget is formed after the bottom-up communication and comprehensive balance; Second, combining with deepening the control and management of target expenditure activities, the key issues affecting the economic benefits of R&D related to R&D projects are identified from the actual situation, and the control of budget funds and expenditure activities indicators of the project shall be strengthened; Third, implement management system, improve budget control and binding force, follow up budget control management according to budget plan, implement responsibility system of responsible unit of R&D project, and run expenditure control management of expenditure activities throughout the budget implementation process.

It is to make clear what to do and to what extent. All work should be determined the objective requirements of visualization, which cannot be quantified, and the staff should also evaluate and clarify the specific objectives of employee satisfaction rate. The performance evaluation department takes three aspects: high-tech enterprise confirmation+budget subject decision-making self-recognition+budget subject employee recognition. What extent should we catch the implementation? First, confirm the goal. The work to be implemented shall be comprehensively balanced by high-tech enterprises, and the confirmation objectives shall be directly issued to the primary and secondary responsible subjects. As the assessment target and bottom-line goal, the responsibility statement shall be signed step by step to ensure the completion. Second, self-recognition goal. From the bottom to the top, the three-level responsibility subject puts forward the self-recognition goal according to their own ability and actual situation. The self-recognition goal cannot be lower than the confirmation target, and it is an important basis for the assessment and bonus. Third, employees are recognized. After the objective and self-identity goal are confirmed, the first and second level responsible subjects make public commitments. The staff of the budget executive body shall be invited to supervise and make the employees of the budget implementation subject recognized.

It is to make clear who will come to do the problem, every work, every link, every goal, who will grasp, who will do it, and who will do it, and it should be implemented to people. No unit can have idle people or lazy people.

First, strictly implement. For the work of budget performance evaluation, the three-level responsible subjects must be implemented in place without compromise to ensure the smooth and complete political order. This is the most basic requirement, and conditions and costs cannot be discussed. Second, dare to innovate. We should emphasize strict implementation, but we should not do anything in one way. We should encourage exploration and innovation. High tech enterprises set up innovation progress awards, and for innovation initiatives at the grass-roots level, especially those promoted in the province, which are recognized by the Central Committee, we should increase the assessment weighted index, raise the file and add points, and give a heavy prize, so as to make exploration and innovation become the fashion of R&D subject. Third, key breakthroughs. In formulating the objectives of confirmation and self-recognition, we should insist on doing something, doing something wrong, and focusing on which aspect is easy to break through.

It is to solve the problem of doing well. All clear objectives and responsibilities for decomposition are calculated, determined, assessed, implemented, rewarded and punished. The well-known and profitable ones who do not pay attention to implementation and doing things can be paid both by the people and the financial personnel who do not grasp the implementation and do not do so. Only by clear rewards and penalties can we maximize the enthusiasm and initiative of the subject of R&D responsibility. First, the award is heavy. If the task objectives are exceeded, the relevant responsible subjects shall be given a heavy prize. For those who have made outstanding contributions, they can be treated, honoured and rewarded. The current year-end assessment "target Award" is comprehensively reformed, material reward quota is increased, the reward level difference is widened, and the heavy prize is publicly awarded. Second, heavy punishment. If the target cannot be confirmed and the single work is backward, the relevant responsible subject shall make public review and rectify within a time limit. Three is one thing one test. The method of breaking the method of "one-off appraisal" at the end of the year has key tasks with clear objectives, including phased work, implementing one thing one assessment, one thing one reward and punishment, one thing one open, and the weighted average of the final assessment at the end of the year. By grasping the three-key links, we can grasp the law and connotation of budget performance evaluation, and can stimulate the power of the officers to start their business, strengthen the vitality of innovation and consolidate the driving force, joint force and ability to accelerate development.

#### 4. Control of R&D Project Expenditure Responsibility

The performance-oriented R&D project expenditure management mode needs to be operated under the corresponding organizational structure. Each internal department is regarded as the specific responsible unit of budget management of expenditure activities, and the corresponding specific responsible unit of project expenditure is set up around the R&D projects involved in each specific construction project. The current department responsibilities are defined according to the optimization objectives of the project budget funds expenditure of the specific responsible units of the project expenditure.

Relying on the budget management committee, R&D project budget management unit and the three-level budget organization system of the specific responsible unit of project expenditure, the budget management mode of "R&D project expenditure performance of high-tech enterprises" is deepened. As the organization and coordination organization of budget management, the budget management committee is responsible for coordinating the planning, preparation, review, implementation, supervision, publicity and performance management of quota standards, and carries out dynamic evaluation. As the management unit of budget, the budget management unit of R&D project is responsible for the daily work of annual project quota adjustment and expenditure budget, and at the same time, it is also responsible for the formulation of quota standards for R&D projects involved in each specific construction project, the calculation of project budget funds expenditure, and the optimization of budget performance evaluation methods. The specific responsible unit of project expenditure shall be responsible for the routine budget management within the scope of responsibility of the specific responsible unit at the corresponding level.

On the one hand, the budget management committee, the budget management unit of R&D project and the specific responsible unit of project expenditure should establish a normal communication mechanism by defining the objectives of budget management, the responsibilities and authority of the secondary teaching and research organization, and strengthening the vertical goal consistency. On the other hand, through improving the working mechanism of the budget management committee, strengthening the coordination and cooperation among horizontal departments, strengthening the awareness of budget responsibility, budget fund expenditure and rules awareness of the specific responsible units of project expenditure.

The establishment of the specific responsible unit of project expenditure is the basic project of building the expenditure standard system, and plays the basic expenditure control function in the expenditure control management of expenditure activities. Generally, the specific responsible units for project expenditure are set up according to the functional institutions. This paper adopts the method of designated division based on organization, and sets specific responsible units of project expenditure according to the function, authority, work objectives and tasks of the organization, so as to keep the budget expenditure standard consistent. For example, the director of the specific responsible unit for the expenditure of teacher training and exercise projects, as the specific responsible unit of the first level project expenditure, is responsible for the approval of the budget funds before the use of the project. The specific responsible unit for the expenditure of the second and third level projects is divided according to the R&D projects involved in the construction project, and is responsible for the application and compliance use of the project budget funds.

The specific responsible unit of project expenditure is only responsible for controllable fund expenditure, mainly including all kinds of expenditure within the budget scope of personnel salary, equipment operation and operation expenditure, vehicle operation and maintenance expenditure, management and other expenditure activities. According to the current accounting subject of the branch's fund management department, the expenditure activities that can be directly attributed to the specific responsible units of each project expenditure are defined as the direct project budget fund expenditure, and the management expenditure activities such as hydro-power gas, office property, travel training and other management expenses are defined as the indirect project budget fund expenditure.

First, the allocation rate of project budget funds is calculated. For example, due to the warehouse equipped with property personnel such as security and cleaning, the daily operation of asset transfer data processing equipment needs to consume energy, while the R&D projects involved in the transfer construction project are work quota in different places, so the expenditure activities are only distributed among the units in charge of the teaching and research equipment storage and asset transfer asset disposal project expenditures. Expenditure activities are distributed by number of persons in all the specific responsible units of project expenditure. The specific responsible units for the expenditure of

teaching and research equipment transfer projects include two specific responsible units for the expenditure of three-level projects, namely, internal transfer of projects and transfer between projects. The specific responsible units for the project expenditures of asset transfer data processing include three specific responsible units for the expenditure of three-level projects, namely, the sorting of asset transfer data, the re-point of asset transfer data and the destruction of asset transfer data, The allocation rate of project budget funds is calculated by taking the amount or number of R&D projects involved in the construction project as the standard quota of project budget fund expenditure. After confirming the direct project budget fund expenditure and calculating the indirect project budget fund expenditure according to the allocation rate of the project budget funds, the unit change project budget fund expenditure of each R&D project involved in each construction project is calculated respectively, so as to determine the expenditure standard of the R&D projects involved in each construction project, so as to conduct the difference analysis of the budget fund expenditure of the project.

## 5. Conclusion

Under the performance-oriented R&D project expenditure management mode, the main control means of the budget management unit include real-time monitoring of the project budget funds expenditure, the control of the activities of exceeding the quota expenditure and the budget performance evaluation.

First, when the project budget funds are monitored in real time, the weighted average coefficient between the direct project budget expenditure and the amount of R&D projects involved in the construction project is calculated by means of weighted average method through the standard work project budget fund expenditure accounting method. Thus, the corresponding quantity relationship between the budget expenditure of the total project of R&D project and the quantity of R&D projects involved in the construction project is obtained.

This is convenient for the analysis of project budget funds and expenditures in real time, and the expenditure control is implemented pertinently, especially the key factors of the project budget fund expenditure found in the difference analysis of project budget funds. The specific responsible unit of project expenditure provides the amount of R&D projects and expenditure activities related to the construction projects every month, the R&D project budget management unit prepares the basic reports such as the detailed statement of the project budget fund expenditure activities, the analysis table of the difference of the project budget funds and expenditures, forms the quarterly meeting mechanism and analyses the reasons for the difference of the project budget funds. The optimization scheme of project budget fund expenditure is proposed.

Second, for expenditure activities exceeding the quota standard, the budget management unit of R&D project shall require the R&D project department involved in the construction project to fulfil the complete budget application and approval process, and explain the specific purpose of the funds. The expenditure activities within the quota standard can be reimbursed easily through the normal expense application form.

Third, the effect of expenditure control is included in the budget performance evaluation. In the current performance evaluation index, the "expenditure control contribution" is added as the added sub index, which links the implementation of the quota standard with the allocation of budget indicators, which plays an incentive role for the specific responsible units of the expenditure of secondary teaching and research projects. The performance evaluation process is divided into self-evaluation and evaluation working group evaluation. The working group composed of the professional personnel of R&D projects involved in the related construction projects shall conduct performance evaluation based

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