

# Research on Enterprise Comprehensive Budget Management in the Era of Big Data

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**Abstract**— The traditional comprehensive budget management relied on historical data to make projections, and the compilation is often made manually, which is easily affected by the subjective consciousness of the compilation staff and the external environment, so budget deviations often occur. If no dynamic adjustment is made in time, it will be impossible for the budget to assist business decision making effectively. The era of big data creates opportunities for companies to collect information from both internal organizations and external markets more easily, helping companies improving the budgeting and thus carrying out their strategic planning more accurately and scientifically. Based on the background of the era of big data, this paper elaborates the basic theory of big data and comprehensive budget management, discusses the problems and causes of the current enterprise budget management, and puts forward the countermeasures to strengthen the enterprise's overall budget management in the big data era. The research results can provide reference for enterprises when implementing comprehensive budget management in the era of big data.

**Keywords**— Big data, enterprise, comprehensive budget management, informatization.

## I. INTRODUCTION

The traditional comprehensive budget management of enterprises usually adopts the fixed budget method within the year, unless the actual operation deviates seriously from the budget plan will choose to adjust, which puts forward the requirements for the accuracy of budgeting. However, the data collected by the relevant personnel in the budgeting process is often not sufficient, the scope of coverage is not comprehensive enough, coupled with the nature of the work of different functional departments and the normal operation of the understanding is not in place. It is often difficult to ensure the scientific and rational budgeting. Previous studies suggested that enterprises adopt bottom-up and top-down budgeting methods to solve problems such as major barrier and poor communication, but the effect is not idealistic. Now we have entered the era where data is king. In addition to the exponential growth of information compared to the past, traditional information processing tools can no longer bear the work pressure brought by massive data. In the past, the system we used to process information is also gradually be sifted out, it puts forward new requirements to the budgeting work, if companies are able to collect huge amounts of data from internal or external channels and focuses on analysis of what might happen in the future, will be able to make a more accurate budgeting, and reflects changes in a timely manner for business market, optimize budget adjustment and dynamic factors to realize the enterprise's target more effectively. Therefore, the study of enterprise comprehensive budget management under the big data has a strong theoretical and practical significance.

## II. OVERVIEW OF BIG DATA AND COMPREHENSIVE BUDGET MANAGEMENT

### (1) Overview of big data

With the development of the network and the popularization of digital multimedia devices, more and more

data are spewed out. They are produced rapidly from a variety of sources through a variety of channels. In recent years, the amount of global data has shown an explosive growth. Thus was born the concept of Big Data. Big data refers to the mass data collection in width, width and speed far beyond the processing capacity of traditional data statistical software and tools. Big data has four characteristics. First, it has Variety: There are various types and forms of data, whether it is the traces of browsing the web, the takeout orders on the APP, or even the automatic positioning of the navigation may become the source of data. Second, Volume: Data is growing rapidly, and the scale is going to reach petabytes, exabytes, and the most intuitive thing for individuals is that a picture on a mobile phone in the past might be less than 1M in size, but now it's about 10M. Third, Velocity: It will shift from the traditional batch analysis and processing mode to the real-time analysis mode. Fourth, Value: There's a lot of information in the data but not all of it has real value, Therefore, it needs to be purified when it is utilized. For coherent information such as video that useful data may only has one or two seconds, which requires high-complexity analysis and analysis of future trends. At present, big data not only includes the large-scale data itself, but also refers to the whole system of data processing, including the collection port, the analysis port and the monitoring port, etc. The advent of the period of big data increasingly emphasizes the ability of people from all walks of life to quickly obtain valuable information and knowledge from the massive data.

### (2) Overview of comprehensive budget management

Comprehensive budget is based on the analysis of the business environment of the enterprise, strategy-oriented implementation of forecasts and decisions, reasonable allocation of funds, talents and other resources to make advance of the planning for business activities and financial activities in a specific period . As one of the means of internal control, in order to achieve the comprehensive budget

management is refers to the enterprise strategic planning and business objectives, especially in the budget period, through the adoption of some budget method arranging overall enterprise operating activities, investing activities and financial activities, then the budget implementation process and results are controlled by making use of business accounting, analysis, evaluation and a series of management activities during the budget. There are four steps to managing a total budget process. First step, set goals. The comprehensive budget determines the business objectives and development direction of the enterprise for a period of time. Under the guidance of the overall strategy, the decision-making organ will first put forward the general goal for a certain period, and then arrange departments at all levels to decompose the general goal from level to level, so as to clarify their respective specific goals. The completion of the specific goals of departments at all levels is the prerequisite for the completion of the overall goal of an enterprise. Second step, organization and coordination. Comprehensive budget management requires coordination of departments at all levels. Different departments in an enterprise often have different functions, so a plan beneficial to a single department may harm the interests of other departments. For example, the sales department will plan to increase sales in order to reflect its own business performance, but the production capacity of the production department may not be able to meet its needs. Under the guidance of the comprehensive budget, each department will carry out its own business around the overall goal of the enterprise to achieve the maximum benefit. Third step, business control. The comprehensive budget is the reference standard of the enterprise's future business activities. Only by walking in accordance with the prescribed route can we achieve the strategic goal smoothly and smoothly. Therefore, when there is a big difference between the actual operating state of the enterprise and the budget, it is necessary to timely analyze the reasons and take corresponding measures to adjust. Fourth step, performance appraisal. Comprehensive budget is a benchmark for enterprises to evaluate their business performance. The high degree of division of labor in modern society determines that the success of a thing depends on many factors, and the realization of corporate goals also depends on the success of various aspects. It cannot simply depend on the completion of the situation, and the budget figure is not the only reference standard. Enterprises should make objective evaluation according to the actual effect.

### III. PROBLEMS EXISTING IN THE COMPREHENSIVE BUDGET MANAGEMENT FOR ENTERPRISES

#### *(1) The deficiency of enterprise informatization*

Enterprise budget management present situation is "computer, financial industry are leaders, real estate industry is at the bottom", from the perspective of enterprise characteristics, it has to do with the extent to which companies use data and Internet technologies. The computer industry relies on its expertise to run its budget efficiently, and the financial industry has a higher requirement for the accuracy of data. In addition to this ,the comprehensive budget management of most enterprises has not been fully

implemented, which lack of input and attention in data and enterprise information management, in particular, small and medium-sized enterprises have limited funds and often do not have expensive financial software systems. At present, the enterprise budget management work is more common use of Excel spreadsheet, While it's also pretty easy to use and powerful, but it can not fully meet the requirements of comprehensive budget management on information. There are many problems such as "unable to coordinate operation between departments" and "unable to automatically obtain data", which leads to the enterprise budget management work is not only time-consuming, laborious, and not accurate enough. In addition, because of the huge workload, companies are also more likely to adopt fixed or roughly flexible budgets during the year, but inflexible budget is not good for business operation and employee motivation.

#### *(2) Incomplete data for preparing budgets*

According to the relevant investigation information, it is found that most of the budgeting methods commonly used by enterprises take functional departments as units for budgeting preparation and reporting. while this is conducive to the optimal allocation of resources, but the data is independent from each other, data lack linkage, and data from R&D, procurement, production, sales and other departments cannot be linked to each other, it is also prone to the phenomenon of data silos and result to a high cost of data storage and incompatibility of information exchange. In the overall budget management process, if ignore the overall analysis of R&D, procurement, production and sales and multiple modules of data don't interact effectively, the budgeting results are likely to be out of step with the external environment of the enterprise and restricts the sustainable development of enterprises. The core of data analysis is the acquisition of data, the more complete the data available, the more comprehensive and effective budgeting can be, in this way, comprehensive budgets can play a guiding role in the work of enterprises.

#### *(3) Slack management for budget preparation*

The budget should be prepared in light of the actual situation, however, due to external risks, insufficient internal management and other problems, budgeting standards will also be relaxed. Moderate slack in budgeting can effectively motivate employees, while giving them some challenge, it also relieves the pressure on them to complete a given task. However, when this incentive is artificially used and manipulated, it will also bring damage to the enterprise. On the one hand, too loose budget will bring a lot of waste of resources, for example, the production department does not pay attention to the saving of materials and labor when carrying out business activities, Only to ensure that the expenditure within the budget range, do not save resources for the enterprise. On the other hand, budget slack can mask adverse differences and affect the optimization of enterprise value chain. If companies set strict spending standards can detect adverse deviations arising from business activities in a timely manner, therefore, measures are taken to eliminate non-value-added operations and increase value-added operations.

Loose budgets, however, hide ineffective spending, not only will this have an impact on current profits, but also it will remain undiscovered in the whole value chain of the enterprise. It is undoubtedly a fatal blow to the enterprise with the strategy of cost leadership.

#### IV. ANALYSIS ON THE CAUSES TO THE PROBLEMS IN THE COMPREHENSIVE BUDGET MANAGEMENT FOR ENTERPRISES

##### (1) *The lower investment in enterprise informatization*

The research finds that the first factor that affects the construction of enterprise informatization is the fund problem, only some large enterprises pay more attention to informatization construction, small and medium-sized enterprises are lack of sufficient financial support, even if they have the idea of building an information platform, they dare not do it, small and micro enterprises are self-reliance on small scale is not necessary and give up information management. In addition, most employees don't have the awareness of using data tools to assist their work, so there will be the use of network office but there is no information management situation. In addition, the lack of professional talents is also the reason that information construction can not be effectively promoted. Although today's data analysis relies heavily on computers and the Internet, but the integration of internal information and data still needs the participation of people, what's more ,the integration processing link is relatively many, which also involves professional knowledge, therefore, high level and high-quality talents are also crucial to the construction of enterprise informatization. However, most high-tech talents choose to work in large enterprises for their own development, this has become the pain point of the development of most small and medium-sized enterprises information.

##### (2) *Internal information asymmetry of enterprises*

Enterprises mostly adopt the bottom-up budgeting method, the lower departments know their own situation best, enterprises decentralize the development of business unit budgets, it helps to get the budget closer to the actual level, but it also tends to lead to information asymmetry, indirectly affect the accuracy of budgeting. Because different levels of information perception are not consistent, lower-level business people may not report accurate budget data, the audit department does not understand the situation of the subordinate departments in place, it may not be able to find the improper place, and the degree of budget slack is entirely dependent on the ethics of the business unit itself. In addition, if the company's strategic culture is not in place, business personnel don't identify with the culture of the company, instead of seeing themselves as part of the value creation of the enterprise, they interpret budgeting as an act of "asking the company for money", that would increase the likelihood of budgetary slack.

##### (3) *Weak consciousness of enterprise management*

The reform of enterprise budget management not only depends on informationization means, but also on the idea of management. Enterprise management has insufficient

knowledge of information management, its management philosophy is conservative and backward, lead to not keeping up with the development of The Times, ignoring their own positioning, market opportunities and future planning etc.phenomenon, these will affect the overall budget management of the enterprise.How to promote the reform of enterprise budget management cannot be solved simply by cooperating with data platform builders, it's more about how managers change their management mindset, even if data tools are introduced to aid budget management, which is also built on the basis of sound business process and good management environment. For enterprises that have adopted the information management platform, its managers may not have a good understanding of budget management, thinking that budget work is just one of the businesses that information management platform can bring leap development, and enterprises may use information platforms for other functions. If companies don't focus their platform building on budgets, so even with the advanced management process, its budget work will not have much development, in this case, the key to the development of corporate budgets is awareness, not technology.

##### (4) *Poor interconnection among various departments within the enterprise*

The daily operation of enterprises is usually carried out mainly by functional departments, departments are independent of each other, resulting in business data generated by each department being independent of each other. In addition, different departments also have great differences in the definition and management of data, which makes it difficult to integrate data. Therefore, it is difficult for data to circulate among departments and information cannot be effectively shared within enterprises, and the phenomenon of "information island" continues to exist. It is not uncommon for different departments to use different management tools, this also makes it difficult to share common information between departments. Surveys have shown that most companies have as many as a few hundred applications in different departments. Imagine how inefficient it would be to find information from so many different data repositories. If the information construction is not relatively perfect, or there isn't a single standard that makes it easier to exchange information in the future, so the isolation between departments is bound to bring a lot of trouble to budget management, operation management and so on.

#### V. COUNTERMEASURES OF STRENGTHENING COMPREHENSIVE BUDGET MANAGEMENT FOR ENTERPRISES IN THE ERA OF BIG DATA

Integrate the ideas, technologies and platforms bred in the era of big data into the optimization of enterprise budget management, it can not only help enterprises to make rational prediction of future business trend and avoid the waste and inefficient use of resources, but also can find the potential risk in time, and take the corresponding preventive measures in advance, and provide comprehensive support for strategy implementation and value growth. Data is not only the



beginning of the budget work, but also the information feedback in the implementation process, it is also the basis for later operation analysis and assessment. Therefore, enterprises should strengthen their own budget management from the aspects related to data, specific measures are as follows.

#### *(1) Strengthening the understanding of information tools*

The underuse of enterprise information tools comes down to people. Only when all employees have a correct understanding of technology, can they truly and effectively promote enterprise change. On the one hand, managers should take the initiative to change their attitudes to improve and adjust the malpractice in the existing management mode. Enterprise information construction is the general trend, which can bring benefits to enterprises and add value to the new breakthrough. Only managers realize the importance of information construction and firmly grasp the opportunities in the era of big data can the comprehensive budget management work be carried out more smoothly. On the other hand, enterprises can't just be satisfied with the introduction of information management systems, it need more to understand the use of automation system to complete the enterprise business process reorganization, break through the fence of traditional management mode. With the deepening and popularization of big data and cloud accounting concepts, enterprises should establish data storage warehouses, strengthen the efficiency and quality of data processing on the information platform. Enterprises need to build a highly shared information management system and realize the effective connection of enterprise multi-module business systems in order to improve the quality of budget management in order to improve the overall management level of the enterprise.

#### *(2) Establishing the enterprise's own data center*

In order to realize the transformation of departmental data from isolated and closed to interconnection, the most direct way is to centralize the data for unified management and establish the data center of the enterprise. On the basis of breaking the "data island" and realizing the open sharing of data resources in various departments, to conduct multi-level and multi-dimensional analysis on massive internal and external data. Enterprises can give full play to the various advantages of big data and make use of information mining technology to provide the forecasting basis and basis for budget management to the maximum extent. Guarantee the implementation of enterprise development strategy, it could enhance the growth ability and core competitiveness of enterprises. In addition, data centers should be able to update themselves in real time, it is able to make a timely trend judgment based on industry dynamics and business conditions, and also to supervising the entire budget work of the enterprise from the beginning of the budget preparation. It gets instant reporting and feedback at every point in the budgeting process, so that it has a good idea of what's going on in the business. Once a large deviation is found, measures should be taken to deal with it immediately to enhance the timeliness and flexibility of the enterprise budget system. At the same

time, to avoid a situation where the budget is too relaxed, enterprises can also optimize their data processing systems and use data analysis tools for analysis.

#### *(3) Cultivating financial personnel with knowledge of big data*

In the era of big data, the financial department will become a highly comprehensive department. Financial personnel need to process and integrate data, and need to have systematic and managerial thinking. On the one hand, enterprises should recruit a group of financial professionals who know comprehensive budget management knowledge and big data software application knowledge to make up for the current gap of financial personnel, relieve the pressure of talent demand. On the other hand, enterprises should strengthen internal training and communication learning, in addition to strengthening the training of accounting, finance and law, the computer level of financial personnel should be improved to lay a foundation for training comprehensive budget management personnel with professional big data operation. All employees of the enterprise should enhance their data awareness, strengthen their cognitive ability, collaborative analysis ability, real-time data analysis ability, etc. They adapt to the rapidly changing era of big data, quickly detect and find relevant relationships among massive, disorganized and illogical cold data, And the data will be used in the enterprise decision-making, so that all employees of the enterprise can master the operation rules of the data processing system in the era of big data.

## VI. CONCLUDING REMARKS

Data is an important asset for today's companies, if you can master the value contained in the data, also master the key to realize the intelligent transformation and upgrade of the enterprise. The advent of the era of big data has brought opportunities to enterprises, enabling them to use a variety of information technology to efficiently solve many problems. On the one hand, big data system can realize data exchange and communication among various departments to ensure the coordinated operation of enterprises. On the other hand, it can also realize the real-time collection and analysis of massive data, which makes it possible to make timely adjustments to problems such as deviation from planning. These two points provide a good foundation for enterprises to grasp the budget implementation of various departments. World economy has entered the stage of high-quality development, and enterprises should gradually transform to high-quality and refined, which depends on the development and application of emerging technologies. Big data technology has gradually become the core engine of the future development of enterprises, and data information technology has opened a new chapter in the comprehensive budget management of enterprises.

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