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A Study on Cost Control of Agricultural Water Conservancy Projects Based on Activity-based Costing

Tiantian TANG *

College of Economics and Management, Huazhong Agricultural University, Wuhan 430074, China

Abstract Based on the theory of activity-based costing and the idea of value chain, activity optimization and cost control are carried out on the whole construction process of agricultural water conservancy projects. Through the use of literature review, case analysis and statistical analysis and other methods, with agricultural water conservancy projects as the research object, and comparing activity-based costing with the traditional model of cost accounting, the writer carries out the corresponding value chain analysis, and comes to the following conclusion: the statistical calculation and analysis of the entire construction process based on activity-based costing can accurately and effectively control the costs of water conservancy projects. Through the use of activity-based costing, the cost data of agricultural water conservancy projects is more detailed and accurate, and cost management personnel can also find non-value-added activities, optimize the enterprise's value chain and achieve cost control objectives through the analysis of the activity chain and value chain of agricultural water conservancy projects.

Key words Activity-based costing, Agricultural water conservancy projects, Cost control

1 Introduction

It has long been self-evident that agricultural water conservancy projects play an important role in China's agricultural development, and they are among the basic projects promoting China's economic development and social progress. As an important part of China's water conservancy projects and also an important factor ensuring agricultural economic development, flood prevention and drainage is closely related to the ability of crops to resist flood disasters. To use a limited source of funds to do a good job in the flood control work of water conservancy projects and protect agricultural production, the relevant cost control is extremely important. As a new cost management method, activity-based costing must be established based on a strong theoretical basis, and then be changed adaptively in accordance with the special situations of agricultural water conservancy projects, in order to fit the actual cost of projects. In the 1930s, Kohler first proposed the concept of activity. Staubus vigorously promoted the development of activity-based costing, believing that companies should not simply allocate costs in accordance with the number of products or the time spent on products. Kaplan and Robin Cooper summed up the entire accounting process of activity-based costing, and made a detailed account of the determination and selection of cost drivers, the establishment of the cost pool of the activity center, and the allocation and calculation of cost data[1-4]. Yu Xulv introduced the concept into China for the first time in 1994[5]. In 1998, in the book *Modern Cost Management Theory*, Chen Shengqun introduced in detail the background of the formation of activity-based costing and the basic principles of its calculation, and also made a comparative analysis of activity-based costing and the traditional cost method combined with cases[6]. Du Danli and Liu Xisong studied the detailed process of manufacturing cost collection[7]. Kang Yumei made a careful study on the classification and determination of activities[8]. At present, activity-based costing is still mainly used in the processing and manufacturing industry, and is seldom involved in agricultural water conservancy projects, which makes the application theory of activity-based costing lack universal representation in our country. In this paper, the author also integrates the idea of value chain, and makes a theoretical supplement and expansion of the application of activity-based costing in engineering projects, and further consummates the theoretical system of activity-based costing for enterprises concerning agricultural water conservancy projects in China.

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* Corresponding author. E-mail: 61579323@qq.com

2 Overview of activity-based costing

With "activity" as the intermediate link, the initial collection and distribution of a variety of resource costs caused by the production of enterprises is implemented through activity-based costing. And then, through activities, the cost data of activities will be assigned to products, so as to realize the cost control of the entire production process and obtain detailed cost data[9]. And the value chain is the monetary form of the activity chain, so we can analyze the production process through the data, and then eliminate non-value-added activities, optimize the enterprise's value chain, and improve the economic efficiency of the enterprise[10]. To sum up the essence of activity-based costing in one sentence, that is, "products consuming activities, while activities consuming resources". It can be said that the accuracy and precision of activity-based costing can create more value for an enterprise.

3 Present situation of cost control of agricultural water conservancy projects

3.1 The disbursement of costs and expenses is not timely With the relevant reimbursement system not in place, the relevant man-

agement departments and construction personnel fail to claim and pay expenses in accordance with the stipulated time and enforcement budget, so that the assignment the project budget is a mere formality, unable to accurately reflect the actual expense disbursement of a certain period. In this case, a lot of hidden disbursements are not reflected on the book timely, resulting in some cost savings illusion, so that the actual situation of expense disbursement can not be controlled in time.

3.2 The knowledge of cost control is insufficient With the acceleration of the pace of enterprise transformation and reform, the market competition is increasingly fierce, and under the new normal, the concept of costs has changed, so companies must change their own notion of cost control. Costs have a broader meaning, including security management costs, quality costs, risk costs, *etc.* That is to say, all activity costs in connection with the operation of an enterprise need to be controlled by the enterprise.

3.3 Cost control awareness is not strong, and water conservancy construction related personnel do not attach importance to it Cost accounting personnel lack the knowledge of engineering business, making the cost control of agricultural water conservancy projects limited to accounting, making it difficult to find the cost control problems existing in the construction process, and making in-depth analysis impossible after the completion of construction. In the approval, construction, accounting and acceptance of a water conservancy project, the main technical departments, construction organizations and construction workers are all the participants in the costs of the project, so naturally, they must participate in the relevant cost control. However, the traditional consciousness of the technical departments and other relevant personnel of the project is relatively strong, but they do not realize it.

3.4 Conservative thinking leads to a wrong focus of cost control As the conservative thinking of cost control is deep-rooted, the focus of cost control work has remained the same, but the economic environment has changed, so that errors occur on the focus of cost control for agricultural water conservancy projects. First, with a focus on reducing the amount of costs spent, the maximization of enterprise benefit is not taken into account. Second, cost control remains the accounting and simple analysis after the completion of a project, and cost control measures are not taken before and during the construction. Third, the cultural level of the relevant personnel in the field of agricultural water conservancy construction is relatively low, which also has an impact on the advancement of cost control work.

3.5 The reward, punishment and incentive mechanism of cost control is not perfect Through the formulation of a reward, punishment and incentive mechanism related to cost control, the effect of cost control will be linked to the wages and bonuses of everyone, which will inspire everyone to participate in the work of cost control and improve working efficiency and enterprise benefit. Because of the construction period and other management-related problems of water conservancy projects, in many cases, the relevant information is not timely delivered to the financial department to handle the relevant accounting after the acceptance of engineering projects, so that the cost data can not be delivered to the financial department in time, and there is no way to carry out effective reward and punishment assessment on cost control.

4 Contrastive analysis of construction cost accounting in traditional model and activity-based costing

4.1 The result of cost accounting in traditional model In the traditional cost-based accounting method, the division of construction products will not be carried out for an agricultural water conservancy project, but instead, the entire project is regarded as a whole in accounting. With such subdivisions as direct materials, direct labor, mechanical costs and other three detailed items, the cost collection of the entire project is carried out, and specifically, mechanical costs are mainly the transport costs for the project. The cost accounting personnel can only get the relevant expense disbursement vouchers from the business department, and then they are gathered to form a set of isolated figures on the book, making it difficult to carry out further cost analysis with the account. Enterprises can only grasp the cost management issues of the project from the pre-construction planning and budget approval, but this simple cost control method is often out of touch with reality, so it not very accurate. In the traditional cost measurement method, cost management personnel can merely get cost data in general terms, so cost accounting personnel are unable to carry out a detailed analysis of project cost control, not to mention putting forward effective measures to reduce project costs.

4.2 The result of cost accounting in activity-based costing and the contrastive analysis Under activity-based costing, each cost is allocated according to different cost drivers. The determination of cost drivers is subjective to a certain degree, but it is undeniable that the cost calculation and allocation under this method is dynamic and refined. In such a detailed cost information chain, the relevant personnel can monitor abnormal cost data fluctuations in real time, so as to form a dynamic cost control of the construction process of an agricultural water conservancy project, and avoid the invalid measurement after the construction in traditional cost method. This is the benefit of using activity-based costing to enterprises. In summary, the use of activity-based costing in agricultural water conservancy projects can make the cost data of agricultural water conservancy projects more accurate and detailed; and besides, the cost control based on the activity center helps to regulate the cost control process of agricultural water conservancy projects, and find the corresponding cost drivers, so as to eliminate non-value-added activities and optimize the value chain of agricultural water conservancy projects.

5 The difficulties of cost control with activity-based costing

5.1 Emphasis is laid on calculation and theoretical guidance is insufficient Those who do not know enough about activity-based costing will mostly regard it as a superior cost calculation

method superficially[11]. Practice is guided by theories. In the application of activity-based costing to enterprises, without rigorous theoretical guidance, the idea of activity management will progress slowly and the value chain application will be insufficient, making it difficult to improve through summarization. This will eventually make the practical effect of activity-based costing fail to achieve the desired results.

5.2 The application is relatively complex Both the theoretical basis and calculation process of the cost control of activity-based costing are entirely different from those of the traditional model. For enterprises with a complex production process and various kinds of products, it is complex and time-consuming to use activity-based costing[12], because activity management personnel not only need to understand so many activities, but also need to obtain a lot of basic data to determine further cost drivers and carry out further calculation and analysis. Not only that, cost management personnel also need to pay attention to the "cost-benefit principle" in the application, in order to avoid blind pursuit of high-quality and high-precision cost data, which results in higher costs.

5.3 Enterprise managers' knowledge is not enough Most senior leaders of enterprises concerning agricultural water conservancy projects are skillful in actual operations and have high ability in actual work on site. However, they often lack the relevant knowledge on the cost control of enterprises, understanding it as a better calculation method superficially, believing that its application is only the interactive compensation of costs among different products and can not play a role in reducing the total costs of an enterprise. As a dynamic cost control method, activity-based costing, by analyzing the calculation results and cost drivers as well as their causes, eliminates useless non-value-added activities, and expands the use and production of value-added activities, so as to improve the economic benefit of an enterprise.

5.4 Compound talents are in shortage In activity-based costing, cost accountants should not only understand basic cost accounting, but also have a full understanding of production activities; they should not only have management skills, but also have the ability to accurately divide the activity center and choose the appropriate cost drivers. The implementation of activity-based costing requires the collaboration of grassroots operators and business managers, so these participants should also have an understanding of this method, which can provide enterprises with more accurate and useful basic cost data[13]. However, it is impossible for enterprises to cultivate a large number of high-quality and compound talents in a short time, so that the application of activity-based costing is subject to certain restrictions.

5.5 The accounting information system is backward, and the basic data is not complete The data collection of activity-based costing is a big project, so how to effectively and comprehensively collect, analyze and apply the data related to activities, has been a tricky thing. As the cost control of agricultural water conservancy projects started late, the cost data system is not sound enough, so much basic data can not be obtained in time, and the application of related financial software is merely to deal with basic accounting treatment. This is another major problem for the application of activity-based accounting in agricultural water conservancy projects.

6 Countermeasures of cost control by using activity-based costing

6.1 Changing the ideological style and opening up a new pattern of cost control All departments should firmly establish the thought of "frugality", increasing income and reducing expenditure, carrying out careful calculation and meticulous budgeting, such as turning off lights and taps when leaving; business departments should effectively implement process control and refined management, especially the daily management of construction materials, in order to ensure that the limited resources can be used in key places. The learning of new laws, regulations and policies should be strengthened, and economic business should be dealt with according to laws and regulations. Financial personnel should learn about the production process, so as to find and solve problems.

6.2 Raising attention and enhancing the construction of compound talents In order to successfully apply activity-based costing, as an advanced concept, to the cost control of water conservancy projects, enterprise management and construction personnel must raise their own attention[14]. This requires not only the innovative awareness of higher-level managers, but also the efficient implementation of common management personnel, as well as the understanding and cooperation of grassroots construction workers. The core management personnel for the implementation of activity-based costing are cost accounting personnel. Only with more in-depth investigations of construction sites and more business knowledge about the process of construction, can they implement scientific and reasonable arrangements for expenses, correctly assign activities and determine cost drivers, as well as carry out the subsequent calculation and analysis.

6.3 Using advanced enterprise resource management software to improve the cost information system Compared with the traditional model, activity-based costing is faced with a difficult problem—the collection and collation of basic cost data. The combination of activity-based costing with advanced enterprise resource management software for data collection and statistics will undoubtedly reduce the costs of manpower statistics. Advanced intelligent enterprise resource management software, such as MPPII and ERP, helps to realize the real-time control and analysis of the data of the entire production and operation, providing great convenience for the cost control of enterprises by using activity-based costing.

6.4 Strengthening the activity-based cost management concept of all staff Standing on the point of view of the entire enterprise, all activities are to create value for the enterprise. Therefore, the concept of activity-based cost management is related to

every activity and every employee. Considering this fact, a systematic theoretical training should be carried out among all employees, so as to make them understand the significance of implementing activity-based costing, stimulate them to take an active part in it, and help them to learn about their own status and the role of they are playing.

7 Conclusion

In the process of literature reading, the author found that few scholars study the whole-process activity-based costing of project enterprises, and the existing studies are only limited to the calculation part of activity-based costing, lacking the value chain application. Under the traditional cost accounting model, construction enterprises can not carry out effective cost control for the whole agricultural water conservancy project, and the cost control of the agricultural water conservancy project rests on the budget formulation before the construction. Through the calculation and analysis of the construction process of the whole water conservancy project, it is possible to carry out accurate and effective cost control of the project. The determination of cost drivers is the focus of using activity-based costing. The function of cost accounting is generally assumed by the financial department of an enterprise. Due to the disconnection between financial staff and construction, the selection of cost drivers is unscientific and inaccurate. The ultimate goal of using activity-based costing is to make the cost data of agricultural water conservancy projects more detailed and accurate, and on this basis, to analyze the activity chain and value chain of agricultural water conservancy projects centered by activities, in order to find out non-value-added activities, optimize the enterprise's value chain, and perfectly save costs and create revenues. Therefore, cost control is of great importance for the management of enterprises concerning agricultural water conservancy projects. With the improvement of the modernization of enterprises in China, the implementation environment and conditions of activity-based costing are becoming increasingly mature. As an advanced cost control method, activity-based costing will definitely play an important role in the cost control of agricultural water conservancy projects in China, and its application prospect will be bright and broad.

References

[1] COOPER R, KAPLAN RS. How cost accounting distorts product costs [J]. Management Accounting,1988(6):20 - 27.
[2] COOPER R, KAPLAN RS. Measure costs right: make the right decisions[J]. Harvard Business, 1988:21 - 28.
[3] COOPER R, KAPLAN RS. How cost accounting distorts product cost [J]. Management Accounting, 1991:4.
[4] COOPER R, KAPLAN RS. Activited-based system[J]. Accounting Horizons , 1992: 9 - 11.
[5] YU XY. The basic framework of the new management system based on ABM[J]. Basic Framework of Modern Finance, 1994 (4): 54 - 56. (in Chinese).
[6] CHEN SQ. The modern cost management theory [M]. Beijing: China Renmin UP, 1998:25 - 48. (in Chinese).
[7] DU DL, LIU XS. One of the key activities of ABC[J]. Business Research, 2004(13): 35 - 37. (in Chinese).
[8] KANG YM. Recognition and classification of homework in activity based costing[J]. Research of Financial & Accounting, 2004,(9): 29 - 30. (in Chinese).
[9] LIU Y. Analysis of third party logistics enterprise cost drivers under activity based costing[J]. Business Accounting, 2012(1): 78 - 80. (in Chinese).
[10] XUE CF. Research on the optimal management of enterprise value chain activities based on competitive advantage[J]. Contemporary Economy, 2013(21):52 - 55. (in Chinese).
[11] ZOU HL. The application of activity based costing in enterprise cost management[J]. Accountant, 2015(15):22 - 23. (in Chinese).
[12] YOU XM. Analysis on the case of WXAH company by using activity-based cost management [D] . Nanjing: Southeast China University, 2014. (in Chinese).
[13] KOU ZJ. Discussion on the application of activity based costing in packaging enterprises[J]. Trade Practice, 2016 (8): 66 - 67. (in Chinese).
[14] SUN JZ. Application of activity based costing in construction enterprise cost management[J]. Economic Research Guide, 2012(8): 182 - 183. (in Chinese).

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is that mother could put her heart into daughter's education. The impact of urban-rural variable on female income is larger than male, and the impact at low quantile is larger.

References

[1] International Labour Organization. Working women [Z]. 2016. (in Chinese).
[2] XIE Y, EMILY H. Regional variation in earnings inequality in reform-era urban China[J]. American Journal of Sociology, 1996, 101 (4): 950 - 992.
[3] ROGER W. Differences in wage distributions between natives, non-refugees, and refugees[R]. Working Papers, 2008.
[4] KOENKER RW, BASSET T. Regression quantiles[J]. Econometrics, 1978: 33 - 50.
[5] KUHN P. Sex discrimination in labor markets: The role of statistical evidence[J]. American Economic Review, 1987, 77 (4): 567 - 583.
[6] BUCHINSKY M. The dynamics of changes in the female wage distribution in the USA: A quantile regression approach[J]. Journal of Applied Econometrics,1998, 13 (1): 1 - 30.
[7] ARULAMPALAM W, ALISON LB, MARK L. Is there a glass ceiling over Europe? Exploring the gender pay gap across the wages distribution [R]. ISER Discussion Paper, 2005.