Application of Cost Accounting Based on Value Chain Accounting in Agricultural Enterprises

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Abstract: Because of the features of small-scale agriculture in Tianjin and the limits of output, variety and production cost and other elements, local agricultural products in Tianjin cannot meet the raw material needs of processing industry. Comprehensive value chain integration has become an important means to promote the development of agricultural enterprises. Besides, in the market environment with rapid information spread and Internet development, the traditional cost accounting can no longer meet the needs of agricultural production enterprises. Then, cost accounting based on value chain accounting has become an important way for agricultural enterprises to further manage costs. This paper studies the benefits of integrating the value chain to the cost of agricultural enterprises, so as to try to help them to change their inherent cost accounting, measure and analyze the cost from the perspective of value chain. This will help agricultural enterprises accept the integration of the entire value chain.

1. Features and Methods of Value Chain Cost Accounting

Value chain analysis is a strategic tool for enterprises. Through the analysis of elements of enterprise operation, it identifies chances and ways to create value for enterprises. Nowadays, with the rapid development of market economy, enterprises have gradually changed their original business strategies, which changes from the idea of selling after manufacturing to studying the needs of customers, and then manufacturing products based on their needs. The relationship between enterprises and upstream suppliers and downstream sellers is also closer, so they have changed from mutual coercion to a win-win situation. Enterprises are also more concerned about the entire value of their products rather than just profits. Meanwhile, they analyze the value creation process of upstream and downstream to seek more chances for cost decrease and income increase.

Value chain accounting is an extension of traditional management accounting under the value chain theory, and its essence is a management activity. It mainly studies the value input, value creation, value consumption and distribution, which is reflected in the unity of material movement and capital movement in the value chain; Value chain accounting takes enterprise value chain as the accounting subject. Its accounting scope is the enterprise value chain and all the economic relations involved. In other words, the accounting scope of value chain accounting will extend to the outside of enterprises; the cost accounting goal of value chain accounting is to maximize enterprise value. Its specific goal is to provide value chain managers with useful information for value chain management decisions, so as to make decisions to optimize the value chain and increase its effectiveness; the accounting object of value chain accounting is the value movement in it. It includes value input, value creation, value consumption and distribution, which is reflected in the unity of material movement and capital movement in the value chain.

2. Application Cases of Value Chain Cost Accounting

2.1. Basic Information of Enterprises

Enterprise B belongs to Agricultural Technology Co., Ltd., which was founded on November 18, 2009. In the early stage, shareholders raised 50 million yuan to build the factory, with an annual rent of 1 million yuan. Its business scope includes research and development of new agricultural products, technical services and transfer, planting and sales of vegetables and fruits, freshwater aquaculture, seedling planting, landscaping projects, import and export business permitted by national laws and regulations, edible fungi planting and related technology research and development, etc. Its income comes from white beech mushrooms and hypsizygus marmoreuses. Apart from corn cob, cottonseed husk and fruit and vegetable sawdust, the raw materials used for mushrooms can be used as petri dish materials, and the suppliers are mostly farmers. The annual output of mushrooms is 4600 tons, and the annual average price is about 7800 yuan / ton, which is mainly sold to agricultural wholesalers.

2.2. Analysis of Cost Management of Enterprise Value Chain

2.2.1. Value-added Screening Analysis of Internal Operation Links of the Value Chain

For B, the quality of mushrooms is closely related to its value chain process after subdivision. The general technological process of mushroom production includes: medium configuration → packing → sterilization → cooling → inoculation → cultivation (inspection) → finished products. This production chain can be divided into different value chains. If each product is regarded as a value chain to analyze its internal value chain, it is first divided into the following five operations. If the main operation links of enterprise B are screened, the results are shown in the following table:

Table 1. Analysis table for operation screening

Value chain structures	Operation links		Codes	Value-added or not	Merged / outsourced or not
Enterprise production core	Research and development	Design new products	1	No	No
Enterprise supply levels before production	Procurement	Procured raw materials transport	2	Yes	No
		Procured raw materials inspection	3	No	Merged with 6
		Procured raw materials warehousing	4	Yes	No
		Procured raw materials storage	5	No	Merged with 4
Enterprise levels in production	Production	Production materials inspection	6	No	Merged with 3
		Production materials handling	7	Yes	No
		Semi-finished products transport	8	Yes	No
		Finished products warehousing	9	No	No
Processing, sales and warehousing levels after production	Sales	Sales order processing	10	Yes	No
		Finished products packaging	11	Yes	No
		Products inventory management	12	No	Yes
Consumer levels		Sales return storage	13	No	Merged with 12
	Basic management	Basic operation management	14	No	No

According to the results of the above table, the analysis is as follows. Firstly, most of the above five operation links of B are non-value-added operations. These links will inevitably increase the corresponding labor and resources, which can be merged or outsourced. For instance, in the procurement link, it can be seen that the inspection and storage of raw materials are not value-added. In other words, consumers will not decide whether to consume their products based on how much they invest.

In the production link, finished products warehousing is also a non-value-added link. However, it is a necessary step connecting the entire production link with the sales link, so it cannot be canceled. However, why "people and products" are move must be pondered. If people and products are move, the cost will occur. If there is no reasonable reason, they should not be moved, otherwise, values must be created.

In the final sales link, the inventory and return management of sold products are not value-added links. This is because if a customer is dissatisfied with the quality of the product, the return will not be based on the manufacturer's compensation. Moreover, for fresh mushrooms, the number of days in stock is very limited. If the products are not sold in time, they may be returned due to deterioration.

Enterprise B should start with the cost management of these links to reduce costs and improve efficiency. For the costs of these links, enterprises can adopt specific methods to discover the reasons for excessive resource consumption and improve the cost efficiency. Enterprises can also choose to outsource some non-core operations for cost management. However, links of research and development and basic management are essential parts of enterprise strategies. Thus, though the two links are not value-added, they should be carefully evaluated from the perspective of enterprise strategies.

Secondly, from the above table, it can be seen that procurement, warehousing, transport, sales order processing and packaging are all value-added links, which should be retained. Moreover, through analysis, it can be seen that in these links, resources can be less consumed to bring added value, which is also the key link of enterprise value added. This is in line with the rule that "higher value-added links in the value chain tend to appear at the front and ends of the value chain". It shows that enterprises should take the initiative rather than completely outsource the sales link in the future production and operation.

2.2.2. Analysis of External Value Chain

The external value chain includes the relationship between suppliers, buyers, different producers of similar products and the value chain of the enterprise. The upstream suppliers of enterprise B are mostly agricultural farmers. The main jobs of these farmers are to provide enterprises with corn cob, cottonseed husk, fruit and vegetable sawdust and other raw materials for mushroom cultivation. In the early stage, they are acquired by enterprise B, and then cultivated by it. Its downstream buyers are mainly agricultural wholesalers. At the end of the period, enterprise B will pack, inspect and clean mushrooms, and then wholesalers will procure them in large quantities. Finally, they will be sold in the vegetable market or agricultural supermarket.

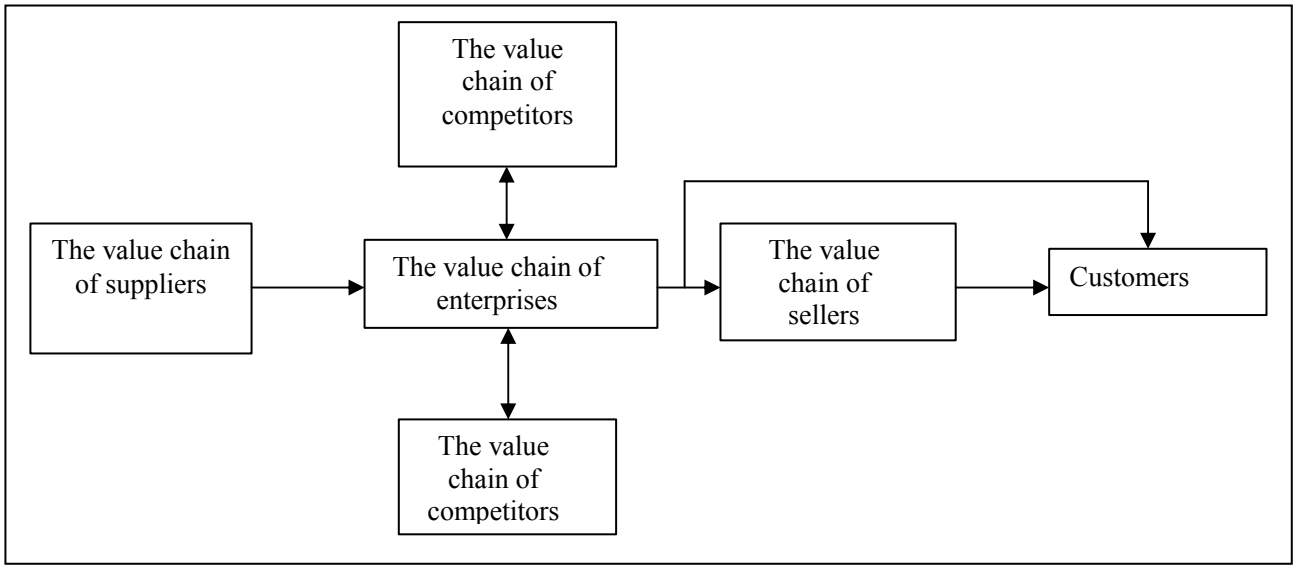

Figure 1. Diagram of external value chain of enterprise B

The focus of cost accounting based on value chain accounting is the analysis and decision-making of transaction cost between enterprises in feed value chain. The upstream suppliers of enterprise B are mostly farmers. This is because in mushroom cultivation, the raw materials needed by enterprise B are mostly agricultural wastes which are not raw materials themselves, but a kind of by-product in the production of other agricultural products. Thus, without a specialized supplier of such agricultural wastes, enterprise B needs to purchase them from different farmers at a

low price. However, because this kind of raw materials are not purchased and processed by specialized enterprises, the quality is not easily guaranteed. Moreover, it is not easy to control the price of raw materials. It is likely that farmers will join forces to increase prices, which is bad to control the cost of raw materials by enterprise B.

The sellers of enterprise B are mostly wholesalers of agricultural products. In such a value chain, the problem of higher transport cost will inevitably appear. Though this kind of cost is not directly borne by the enterprise, it will be included in the total cost and increase the price of the product. This kind of mushrooms will no longer have a price advantage in the market. Besides, due to the scatter of sales channels, downstream specific customers will also be scattered, so the choice of customers will be broader, which cannot increase the customers' viscosity of products.

Apart from agricultural wholesalers, enterprise B also has some products directly purchased by individual customers. This kind of customers include processors of other products and ordinary consumers. Such customers only account for a small percentage of all consumers due to blocked advertising channels. However, the prices offered to them are the same as those offered to agricultural wholesalers. This may cause dissatisfaction with agricultural wholesalers. If the number of such consumers continues to increase, it will also cause market price confusion.

3. Evaluation Analysis

3.1. Countermeasures to Improve the Cost Management of the Internal Value Chain

3.1.1. Formulating the Corresponding Budget System

Cost management based on supply chain accounting needs more budgetary support. How to combine budget and supply chain cost management has also become a problem. In terms of budget setting, the original operation costing method should not be used, but the method under supply chain accounting should be used for budgeting. For instance, in the selection of suppliers, a specific budgeting should be based on the costs incurred by the selected suppliers under value chain accounting. In the production process, budgeting should also be done according to the specific value chain. Generally speaking, budgeting should be rebuilt according to different value chain processes instead of production lines. Different value chains should also have different budgeting.

3.1.2. Conducting Internal Difference Analysis

Different customers have different demands for the products produced by enterprises. For instance, some customers need high-quality products, so their sensitivity to price will be very small; some customers are very sensitive to price changes, indicating that they focus more on prices. Enterprise B can find products that are far ahead in technology and production difficulty for planning. It has technical content in this aspect, so it has the highest configuration in this aspect. Looking for a product that can become the advantage of the enterprise enables it reflects a different height from others. What may be needed in the production process is self-made rather than outsourced. For products with low value and sensitive to price changes, if such products are not significantly different in quality from those of other enterprises, enterprise B can outsource some processes to spare labor and material resources to produce more valuable products.

3.1.3. Distinguishing the Value-added Links of Enterprises

For enterprise B, inventory cost is the top concern, because if the inventory time is long, it will only increase the inventory cost. Thus, if the inventory cost can be optimized or reduced, then the competitiveness of the whole enterprise can be enhanced. Enterprise B can analyze the growth cycle of mushrooms while purchasing raw materials to obtain the maximum usage. It can calculate the best order batch without affecting production, which will effectively reduce procurement and holding costs. Direct delivery after packing can avoid renting transfer warehouse and reduce storage cost. Optimizing the transport route can improve the transport efficiency. The loading efficiency should be emphasized, and the transport between plants should be used with the highest efficiency. In production, efforts should be made to optimize the production space, compact layout, emphasize

the coordinated work of workers with the same level, and timely replace the old equipment, so that the production sustainability of new equipment will be enhanced. Good communication between people should be emphasized, so that non-quantitative things can become part of manufacturing.

3.2. Countermeasures to Improve the Cost Management of the External Value Chain

3.2.1. Enhancing the Construction of Mushroom Production Bases, and Reducing the Remote Procurement Cost of Enterprises

Enhancing the support for local mushroom production bases can effectively relieve the pressure of enterprises in raw material procurement cost, which is one of the cost control strategies in strategic cost management. For this, enterprise B should enhance the establishment of mushroom production bases. Mushroom cultivation is only a relatively low-end step in the whole industrial chain. The advantage of enterprise B lies in the cultivation of edible fungi and related technology research and development, which has become one aspect of its competitiveness. Thus, enterprise B can change from simple procurement of raw materials to technical guidance of mushroom cultivation. It can find some capable farmers with raw materials and provide them with training and guidance, so that they can directly process local raw materials. Then, it can make batch procurement when mushrooms mature.

3.2.2. Adopting a Joint Sales Strategy

It is also possible to cooperate with upstream suppliers in the selection of products. This is because in the production of mushrooms, the initial step is to select good raw materials. Joint sales with upstream suppliers can also enable customers to intuitively feel the quality of the products provided by the raw material providers. Meanwhile, when the upstream raw materials supply farmers and enterprise B is connected, if the products of enterprise B are questioned, the products of these farmers will also be negatively affected. Such bundling can enhance the value chain, and truly enable upstream suppliers to truly realize the importance of the value chain. While selling the products of enterprise B, this method can also help upstream suppliers to broaden their sales channels, seek new sales opportunities, and achieve a win-win situation.

3.2.3. Strengthening the Penetration of Commercial Supermarkets

Commercial supermarkets are still one of the main channels for B to sell products. Strengthening the control of this channel can effectively expand sales. To expand the brand awareness and enhance the original supermarket sales channels, enterprise B should strengthen the cooperation with large chain supermarkets and farmers' markets, like Carrefour, Wal Mart, etc. On the one hand, it can make use of the platform of large supermarket chains to better promote products and promote brand image. On the other hand, signing a contract with supermarket chains can reduce the loss of management costs in negotiating with other non-chain supermarkets.

The number of main downstream distributors and wholesalers of enterprise B still accounts for the majority of the sales channels. Thus, while broadening new markets, it should maintain the good relationship with the original wholesalers, and carefully consider about prices. For instance, products cannot be sold too cheaply to newly negotiated supermarkets or farmers' markets. Though the reduced logistics costs and administrative expenses can greatly reduce the sales price, the profit from sales to supermarkets or farmers' markets should be controlled within 5% of the total profit.

Meanwhile, enterprise B should actively reach cooperation intention with local agricultural products APP, Jingdong and other good e-commerce platforms, and use their broad platforms to promote and sell products. Besides, it should enhance the construction of online shopping mall, simplify payment methods, optimize the express delivery channels, and facilitate customers to select and purchase the enterprise's products online.

4. Conclusion

Through the analysis of the value chain of mushroom production in enterprise B, this paper analyzes the value-added links in the value chain and determines the optimal operation link and the

cost management projects that B urgently needs to change. Meanwhile, it concludes a series of links like inspection; storage and warehousing are not value-added items, and enterprise B can focus on cost management in these links. However, for research and development and basic management, these two links are completely different, which requires enterprises to conduct strategic analysis. Besides, the analysis of the transaction costs between enterprises in B's value chain can determine different combinations of upstream supply farmers, downstream customers and agricultural products wholesalers to find the best combination of the value chain. This kind of cost analysis and accounting method based on the value chain accounting model corrects the shortcomings of traditional accounting and is a new trend of cost management in agricultural enterprises.

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