

Research on Application of Activity-based Costing in Enterprise Product Pricing

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Abstract: The primary purpose of enterprises is to make profits. Being the monetary value of goods, price has close correlation with corporate profits. The product cost plays an important foundation role in pricing. With the high development of new technology, it is absolute that traditional cost accounting methods can not meet the automotive industry's need for accurate cost information. Activity Based Costing (ABC), which focuses on activity and its cost driver, can determine the cost of the product to arrive at a reasonable price much more accurately. The case in the article shows that the Activity Based Costing provides accurate cost information for enterprise and can be scientific basis in pricing.

Keywords: Activity Based Costing (ABC); Product cost; Enterprise; Pricing

1 Introduction

Nowadays, in the increasingly fierce competition market environment, pricing new product correctly helps enterprises hit the market efficiently and obtains good condition to survive; Adjusting product price reasonably can speed up the enterprise's growth pace, thus making more profits. Therefore, Pricing is a kind of scientific knowledge, which is vital for the survival and development of enterprises. Seeing activity as the basic objects of cost accounting and using two-stage cost allocation method, that is from resources to activity, from activity to product, Activity Based Costing overcomes the drawbacks of the traditional cost accounting methods, and is good at providing more accurate cost information, thus making Activity Based Costing the scientific basis in pricing.

The product cost calculation is important for enterprise product pricing process, and directly affects the formulation of product pricing strategy. Compared to other factors that affect product cost, such as demand and supply, consumer psychology, policy and other external factors, which cannot be decided by the enterprise, product cost belongs to the internal factor, which can be grasped and controlled by enterprise.

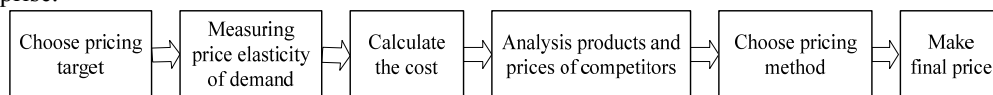


Figure 1 Basic Process of Pricing in Enterprise

We can see cost is the key to enterprise product pricing and the foundation to achieve product pricing strategy. At present, while enterprises choose the most basic pricing method which is called cost-plus method, to pricing product, the effect of cost is more marked. Cost accounting will have a direct impact on the pros and cons of pricing. If overestimated, the price is empty tall and it will weaken competitiveness of products in the market. If underestimated, the product price is lower, and will erode the profits in the future. Therefore, the key to reasonable pricing is to determine a cost accounting method, which provides accurate cost information for enterprise and can be scientific basis in pricing.

2 Disadvantages of Traditional Cost Accounting Methods and the Emergence of Activity Based Costing

The 80/20 rule, that is 80% of the profits come from 20% of the products of the enterprise, is generally accepted in business world. But when Harvard business school professor Kaplan calculated cost of products using Activity Based Costing, he found that 20% of the products had generated 225% of profits, which he called the 20/225 rule. This law shows that many products are actually eroding profits, and this is the information provided by the traditional cost doctrine. From the applying environment and standard of distribution, management accounting with traditional cost accounting is losing its relevance and reliability.

In this situation, Activity Based Costing was emerged and developed, and gained wide attention since then. It has the advantage of providing more accurate cost information for enterprise's products. When it comes to the standards of distribution, the Activity Based Costing method will focus on indirect

costs, and it no longer uses single, but various distribution benchmarks to distribute. Starting from the cost object and the relationship of the consumption of resources, it uses resources driver to distribute indirect expenses to activity, and then uses activity driver to distribute activity costs to objects, so as to solve the distortion problem of traditional cost calculation methods of cost information for users, and provide more accurate cost information. Activity Based Costing method can also put sales cost, research and development cost and other period costs belong to the products that cause they happen. As a consequence, it provides rich information for the products.

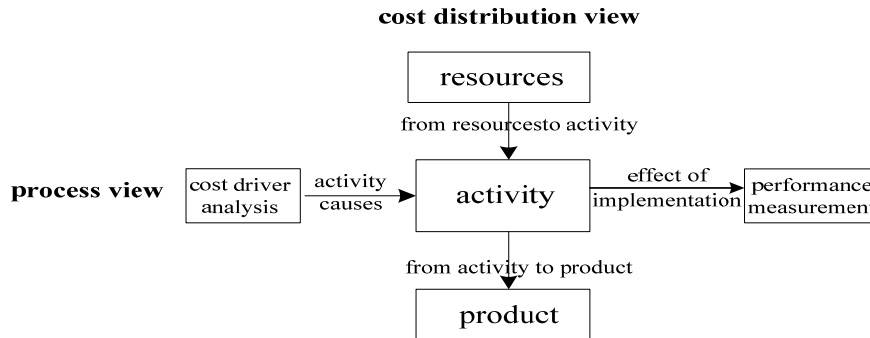


Figure 2 2d Activity Based Costing Management Model

3 Case Study: A Building Material Enterprise

The building material enterprise is a large industrial enterprise engaged in research and development, production and sales of the cement, glass, ceramic and advanced building materials product, and has the right of import and export. Its production capacity and income are among the best in the industry. At present, the company has nearly 20 home branch offices, subsidiaries and its fixed asset values more than ten billion. The enterprise plans its output in 2015 years can achieve: 100 million tons of cement, 10 million weight boxes of flat glass, 50 million square meters granite plate, 150 million square meters porcelain tiles, 20 billion new wall standard brick materials. The expected income is 100 billion RMB. In order to achieve the desired goals, and provide more accurate costs management information and pricing decision, the company decides to use Activity Based Costing on T-001 and T-002 since January 1, 2011 .Some details are as follows:

The number of T-001 which is put into production is 5 million this month and completed 4 million pieces. The number of T-002 which is put into production is 5 million this month and completed 3 million pieces. This month the production cost materials costs (including main ingredient, auxiliary materials, packaging materials, etc): 130 million RMB for T-001, 150 million RMB for T-002. All the other resources consumption: 1 billion RMB for salary expenses, 450 million RMB for power, 845 million RMB for depreciation cost, the other costs is 80 million RMB.

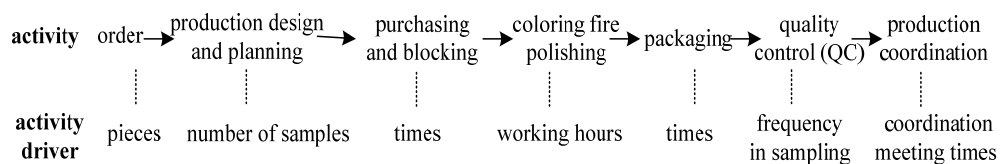


Figure 3 Activity and Activity Drivers

First, according to the resources driver, allocate four of resources cost to seven kinds of activities. All the activity distribution ratio should be summed 1, that is \sum resource driver ratio = 100%. For example, for salary expenses, resource drivers of each activity are as follows: 2%, 15%, 19.3%, 37.5%, 14.2%, 4.5%, and 7.5%. So are other resource drivers. This process is to realize the first distribution: resources \rightarrow activity.

Table 1 Resources Costs Allocation Schedule

(Unit: 10 thousand RMB)

Items	Salary Expenses	Power Expenses	Depreciation Expenses	Other Expenses	Total
Order	2000	900	1690	160	4750
Production Design and Planning	15000	6750	12675	1200	35625
Purchasing and Blocking	19300	8685	16310	1544	45839
Coloring Fire Polishing	37500	16875	31686	3000	89061
Packaging	14200	6390	11999	1136	33725
Quality Control (QC)	4500	2025	3802	360	10687
Production Coordination	7500	3375	6338	600	17813
Total	100000	45000	84500	8000	237500

According to different activity drivers, distribute activity cost to all kinds of products. This process is to realize the second distribution: activity→product.

Table 2 Product Cost Collection Table

(unit: 10 thousand RMB)

activity	Activity Driver	Total Number	T-001	T-001 Activity Cost	T-002	T-002 Activity Cost
Order	pieces	8	3	1781.25	5	2968.75
Production Design and Planning	number of samples	16	6	13359.38	10	22265.63
Purchasing and Blocking	times	80	30	17189.63	50	28649.38
Coloring Fire Polishing	working hours	160	60	33397.88	100	55663.13
Packaging	working hours	70	20	9635.71	50	24089.29
Quality Control (QC)	frequency in sampling	55	15	2914.64	40	7772.36
Production Coordination	coordination meeting times	32	12	6679.88	20	11133.13
Total	-	-	-	84958.35	-	152541.65

$$\text{cost per unit (T-001)} = \text{total cost (T-001)} / \text{equivalent production units} = 84958.35 / 450 = 188.80 \text{ RMB / piece} \quad (1)$$

$$\text{cost per unit (T-002)} = \text{total cost (T-002)} / \text{equivalent production units} = 152541.65 / 400 = 381.35 \text{ RMB / piece} \quad (2)$$

Plus costs of direct material, then:

$$\text{cost per unit (T-001)} = 130000 / 500 + 188.80 = 448.80 \text{ RMB / piece}$$

$$\text{cost per unit (T-002)} = 150000 / 500 + 381.35 = 681.35 \text{ RMB / piece}$$

To compare the differences of product cost calculation between Activity Based Costing and the traditional cost accounting methods, the company also calculated the product cost(including wages)of T-001, T-002 by using traditional cost accounting methods:

$$\text{unit manufacturing cost (T-001)} = \text{total cost of T-001} / \text{equivalent production units} = 212.42 \text{ RMB / piece}$$

$$\text{unit manufacturing cost (T-002)} = \text{total cost of T-002} / \text{equivalent production units} = 310.78 \text{ RMB / piece}$$

Plus costs of direct material, then:

$$\text{cost per unit (T-001)} = 130000 / 500 + 230.42 = 490.42 \text{ RMB / piece}$$

$$\text{cost per unit (T-002)} = 150000 / 500 + 280.78 = 580.78 \text{ RMB / piece}$$

From the above contrast, there exists big difference between Activity Based Costing method and traditional cost accounting methods. The difference in the traditional methods to calculate the cost of manufacturing cost is not big, the main reason of which is that T-001, T-002 product's direct labor hours caused by the difference is not big. But according to Activity Based Costing method ,because T-002 is more complex in technology, the distribution of the manufacturing costs more, thus making T-002's unit cost much higher than T-001's. Suppose cost-plus method is used as pricing strategy, imagining cost-plus rate is 20%, then:

Table 3 Cost-plus Pricing by Different Methods

Items	Activity Based Costing		Traditional Cost Accounting Methods	
	T-001	T-002	T-001	T-002
Product Cost	448.80	681.35	490.42	580.78
Plus Rate	20%	20%	20%	20%
Price	538.56	817.62	588.50	696.94

From the table above, pricing result using Activity Based Costing method for product T-001(448.80 RMB) is lower than (490.42 RMB) of traditional cost accounting methods, while T-002's actual price(681.35 RMB)is much higher that(580.78) of traditional cost accounting methods. This shows that the accuracy of the calculation cost of product directly affects the rationality of the product pricing, especially in the products that include high technical contents and complex technology. The calculation result by Activity Based Costing method is stronger in correlation and reliability and more conducive to pricing decision, just taking the T-002 products as an example. To pricing according to the traditional cost accounting methods, T-001 products priced too high (588.50RMB), but the price of T-002 products which contains complex technology and needs strict conditions is too low (696.94RMB), the cost of such pricing information covers up the real cost of product information, and causes a degree of misleading of the enterprise management of the production activity. Instead, this problem can be solved well by using Activity Based Costing to calculate the cost of the product. Because T-002 product's craft level is complex, requiring high due to cost, the unit cost is 681.35 RMB, while T-001 product's unit cost is only 448.80 RMB. Therefore, T-002 is 279.06RMB higher than T-001 product.

Note that, when business has following questions or similar signs, Activity Based Costing method is especially needed to use in cost accounting or inspect the cost information:

(a) About internal departments: managers of the production department don't believe in the product cost calculated by accounting department, and because some products often disturb the normal order of production, they suggested lower the production of high profit products; The sales department is not willing to use cost reports given by accounting department in sales pricing decision; Accounting information data shows that the sales increase but total profits have fallen at the same time, and the distribution of the indirect cost rate is very high and constantly expanded significantly.

(b) About competitors: while the price of the high yield product is low enough, the competition's is surprisingly much lower. In order to win the competition, the enterprise wants to know if there's still some space to lower the price. A product is with high profit margins, and the enterprise intends to expand the scale of production, but the competitor is not always willing to produce that kind of product.

(c) About customers: the enterprise who uses cost-plus method to pricing the products which need complex manufacturing process finds that although the plus rate is the same with others , customers would be willing to give up the contract with the competitors' and choose to buy this enterprise's.

4 Conclusion

As is known to all, product cost plays an important foundation role in pricing. With the high development of new technology, traditional cost accounting methods can not meet the automotive industry's need for accurate cost information. Activity Based Costing, which focuses on activity and its cost driver, can determine the cost of the product to arrive at a reasonable price much more accurately. The case in the article shows that the activity-based costing provides accurate cost information for enterprise and can be scientific basis in pricing. Activity Based Costing method helps enterprises to pricing correctly and stands out from their competitors ,thus making more profits and marching forward steadily toward prosperity.

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