

# Product Profitability Analysis Based on EVA and ABC

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## Abstract

On the purpose of maximizing shareholders' value, the profitability analysis established on the basis of traditional accounting earnings cannot meet the demands of providing accurate decision-making information for enterprises. Therefore, this paper implements the Activity Based Costing (ABC) and the Economic Value Added (EVA) into the traditional profitability analysis system, sets up an improved EVA-ABC based profitability analysis system as well as its relative indexes, and applies it to the study of the capability of profitability. The results show that the improved system can minimize the impacts of accounting policies, objectively reflects the operating performance of an enterprise, and provides more accurate information to decision makers.

**Keywords:** activity based costing, economic value added, profitability analysis

## 1. Introduction

In the traditional profitability analysis system, return on equity (ROE) and return on assets (ROA), which comprehensively reflect operation level and financial position of enterprises, are fairly representative indexes of profitability evaluation. However, due to it is established on the basis of profit maximization, inevitably, it cannot fully reflect the company's operating performance (Ge et al, 2002). Firstly, rigging profit through the accounting policy adjustment, debt restructuring or other non-business operation activities can not reflect sustained profitability. Secondly, it excessively counts for excessive investment caused by pursuing scale and profit (Robin, 1999) and other similar behaviors damaging shareholders and creditors' interests; also, it excessively accounts for management problems like insufficient investment caused by pure pursuit of asset return rate. Thirdly, it only takes the cost of interest-bearing debt and not the equity capital which has higher cost rate into consideration, therefore, decision-making related person cannot judge whether business create shareholder value on the whole. Finally, adopting traditional cost calculation method leads to inaccurate product profit and incomplete product cost information, especially in the enterprises where indirect costs accounted for more. Value management is then widely welcome under current situation (Yan, 2004). This paper implements Activity Based Costing (ABC) and Economic Value Added (EVA) into the traditional profitability analysis system, sets up an improved EVA-ABC based products profitability system which is oriented at maximizing shareholders' value to solve these problems including improving cost control circumstances, providing accuracy decision-making information and promoting enterprise profitability. It analyzes ability to create value systematically and provides more effective decision basis for strengthening enterprise management.

## 2. Literature Review

Tully (1993) claims that EVA is the actual approach to create value, and puts forward three ways to increase EVA. Topkis and Maggie (1996) assert that EVA is a new method to look for trading. Meanwhile, empirical researches also show that EVA has more value relevance than traditional accounting appraising indexes (Chen, Wang, 2004). EVA measures enterprise's economic profit on the basis of economic cost and helps the manager to realize that all resource should be paid back (Chen, Wang, 2002). Sougiannis (1994) analyzed research expenditures factors for the company's future EVA growth by taking American enterprises as samples, and then studied the influence of those three factors of company size, positive and negative economic value added and industry category on EVA. Young and O'Byrne (2002) find that there is a significant positive correlation among R & D spending, sales growth, industry returns and future EVA, which change with industries. Previous activity cost researches mainly focus on how to apply activity cost model in determining the best product combination

(Robert, 2001), how to track cost (Aminah, 2001), how to support the operator's operation decision (Dickeson, 2001), etc. In recent years, applying EVA gradually becomes a trend in the development of activity cost theory. Cooper et al think that it is necessary to integrate ABC and EVA for enterprise's long-term decision, and emphatically analyze the characteristics of the enterprise capital (Robin, 1999). Roztocki (1998) studies the methods and specific steps of integrating ABC and EVA in service industry. Labro and Vanhoucke (2008) study the problems of various cost resources consumption model in the system and the stability of cost calculation system. Emblemvag (2007) combines ABC and EVA to improve manufacturing enterprise management at the grass-roots level, and analyzes several cases. Hubbell (1996) puts forward integrated ABC and EVA to improve the quality of enterprise's cost information. However, it still limits cost calculation in production cost, and does not consider the cost of capital calculation and distribution in the product, so although the integration can reflect enterprise's overall profitability, it fails to reflect the profitability of products and customers clearly or make significant effects on the accuracy of the product and customer related decisions.

Therefore, the paper mainly solves the problem how to apply the effectiveness in the performance evaluation of EVA and the accuracy in calculation as well as the positive utility in cost control of ABC to profitability appraising, in order to gain high quality data information while helping enterprises to carry out cost control and decision analysis. On the basis of previous studies, this paper implements the Activity Based Costing (ABC) and the Economic Value Added (EVA) into the traditional profitability analysis system oriented at Economic Return on Equity (EROE). The new system brings equity capital cost into the scope of cost calculation, adjusts accounting data to eliminate accounting policy distortion, and uses ABC method to calculate the main operating profit to overcome the disadvantage of unreasonable indirect cost allocation resulting from traditional calculation method, so it obtains accurate cost and profit and lays the foundation for scientific profitability evaluation of the product.

### **3. Building EVA-ABC Based Product Profitability Analysis System**

#### *3.1 Improvement Ideas of the Traditional ABC*

Although ABC method provides accurate product operating costs, it cannot identify which products create economic value and increase shareholder wealth. In some cases, it significantly increased the cost of the product when capital costs are included. Meanwhile, managers get a more powerful management tool (Roztocki, Kim, 1999). Accounting methods without considering capital costs cannot reflect the corporate value creation and meet the shareholders requirements. ABC just re-adjusts the cost structure on the basis of the traditional cost information, so it only evaluates products profitability objectively and accurately to ensure the realization of profits, but it still has never been able to reflect the corporate value creation. Ignoring capital costs will lead to incomplete cost information and affect product pricing, which results in management decision-making mistakes. Then the company will miss the best time for product sales, and ultimately affect the company's comprehensive profitability. Moreover, the approach without taking capital costs into account will lead to exaggerate or reduce some of the department's performance, which results in pursuing department contribution partially, enlarging scales unreasonably and slacking in work phenomenon and so on. It is not conducive to implement the incentives.

The core idea of EVA is capital efficiency, the difference between the return on capital and the cost of capital, which emphasizes the deduction of capital costs including equity cost based on shareholder value as the core. It is in accordance with the economic reality concept (Li et al, 1999). In order to better serve the company's strategic decision-making and performance evaluation to overcome the ABC limitations in management accounting, the paper introduces the EVA into ABC and calculates products capital costs in accordance with the thinking in the ABC measurement, improving the product cost, and correcting the accounting profit to economic profit. In the paper, profitability analysis indicators, economic profit margin, economic return on assets and economic return on equity, are re-defined. The EVA concrete improvement on the traditional ABC profitability analysis is shown as Figure 1.

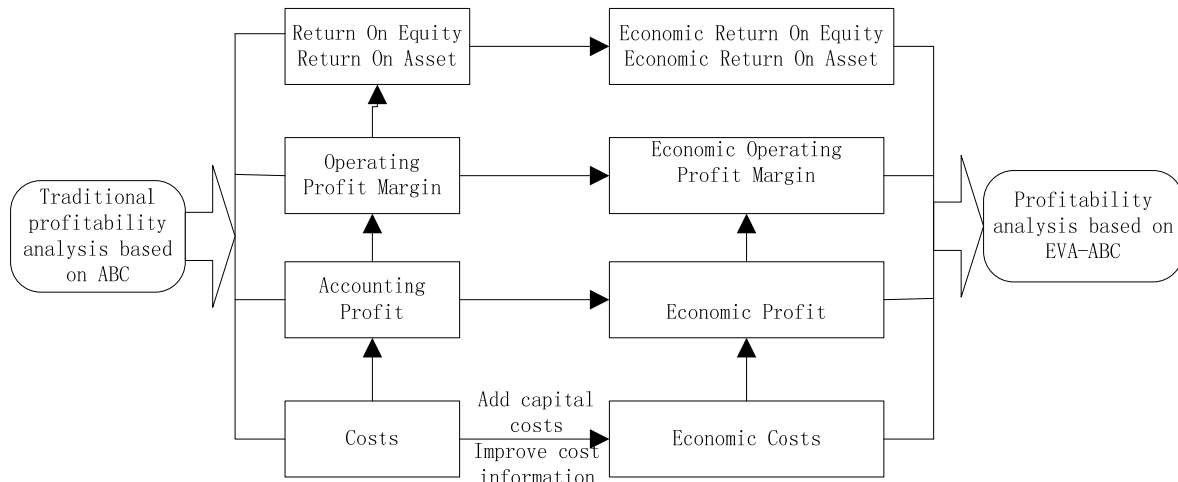


Figure 1. EVA’s improvement on the traditional profitability analysis based on ABC

Product profitability analysis based on EVA-ABC comprehensively considers the cost of the product, its indicators directly reflect whether the product can bring growth in shareholder wealth and meet the requirements of the shareholders of the corporate objectives. Besides, the new system makes various departments recognize the valuable of resources and improve efficiency in the use of capital. It utilizes the common advantage of both ABC and EVA, and reaches advanced nature than other analytical methods with the important role of EVA in two major aspects of the evaluation system and incentive mechanism.

3.2 Costs Calculation

On the basis of ABC model, the paper adds the calculation of capital costs. The specific steps include the following four steps.

Firstly, definite activities, activity cost libraries and activities measurement basis, and collect financial information.

Firstly, definite activities, activity cost libraries and activities measurement basis, and collect financial information. Activity refers to kinds of specific jobs in enterprises’ operation (Chinese Institute of CPAs, 2010), such as signing material procurement contracts, delivering material to store, inspecting material quality, managing storage procedures, registering materials details, etc. An activity must be specific or standardized processes and approaches executed repeatedly for any processing or service object. While activity cost library is a drum container that contains costs associated with the single activities measurement basis which is distribution standard in the system (Eric et al, 2010). Activity measurement basis is usually related to cost drivers. Therefore, this step is the key link to apply ABC method. But it’s difficult to some extent in practice and needs the help of professional judgment and takes a lot of time. Usually, we can solve the problem by watching producing and manufacturing process, asking related workers and other alternatives. The sources of financial information mainly rely on corporate financial statements, including balance sheet, income statement, cash flow statement, and costs associated reports, etc.

Secondly, calculate activity cost. According to the basic principal of ABC “activities consume resources and products consume activities”(Ernest,Hugh,1996), the consumption ratio of the activities costs is determined through original materials of the production costs and other expenses, then the indirect costs are allocated to the activity cost libraries, finally dated back to the cost objects. Calculation process is shown in Figure 2.

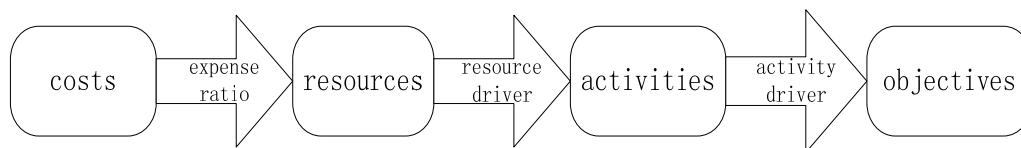


Figure 2. Activity cost calculation process

Thirdly, Calculate capital cost.

First, adjust capital of enterprise is calculated according to the related information from balance sheet as follows.

$$AdjuNA = NA + AI - AdjuD \quad (1)$$

In the formula (1),  $AdjuNA$  is for adjusted capital,  $NA$  is for book assets,  $AI$  stands for impairment preparation and  $AdjuD$  on behalf of non-interest current liabilities. Second, the amount of capital various activities occupy is determined, and the cost of capital is computed through adopting activity capital dependence (ACD) analysis method. The first step is to calculate total capital cost according to the amount of capital various activities occupy multiplying by the weighted average cost of capital (WACC), and then the total capital coat consumed in the previous step will be traced back to specific cost object by activity motivation. Calculation weighted average cost of capital is shown as formula (2).

$$WACC = \frac{D}{D+E} \times r_D (1-T) + \frac{E}{D+E} \times r_E \quad (2)$$

In formula (2),  $WACC$  represents the weighted average cost of capital,  $D$  stands for liabilities,  $r_D$  for liabilities Interest rate,  $E$  for equity and  $r_E$  for equity capital ratio,  $T$  stands for the tax rate.

Finally, operating costs and capital costs are allocated to the different levels of cost objects. The costs computed in the second and the third step are assigned to each item, then the total costs of products, the economic costs, are worked out.

### 3.3 Cost Volume Profit Analysis Based on EVA-ABC

Cost Volume Profit analysis (CVP) based on EVA-ABC is built on the basis of activity-based costing and economic value added to evaluate the products profitability. Specific analysis process is as follows.

$$\begin{aligned} P &= S - TC - TR = S - TCV - TCK - TCB - TCM - TR \\ &= P_U \times Q - (VQ + \sum_{i=1}^{m_1} V_i Q + \sum_{i=1}^{m_2} B_i N + \sum_{i=1}^{m_3} K_i + \sum_{i=1}^{m_4} M_i) - (RQ + \sum_{i=1}^{m_1} R V_i Q + \sum_{i=1}^{m_2} R B_i N + \sum_{i=1}^{m_3} R K_i + \sum_{i=1}^{m_4} R M_i) \\ &= P_U Q - (V + R) Q - \sum_{i=1}^{m_1} (V_i + R V_i) Q - \sum_{i=1}^{m_2} (B_i + R B_i) N + \sum_{i=1}^{m_3} (K_i + R K_i) + \sum_{i=1}^{m_4} (M_i + R M_i) \end{aligned}$$

Simply to

$$P = [P_U - (V_0 + \Delta V_0)] Q - (B_0 + \Delta B_0) N - (H + \Delta H) \quad (3)$$

Above,  $P$  for profit,  $P_u$  for Price,  $V$  for Unit direct cost,  $Q$  for output,  $R$  for unit direct costs the cost of capital,  $S$  for income,  $TC$  for total costs,  $TCK$  for species-level activity total cost,  $TCV$  for the total cost of production-level activity,  $TCB$  the total cost of the batch-level activity,  $N$  for the batch,  $TCM$  for the total cost of maintaining production activity,  $TR$  for the total capital cost,  $V_i$  for production-level activity cost,  $R V_i$  for capital cost of production-level activity,  $R B_i$  for capital cost of batch-level activity,  $R K_i$  for capital cost of species-level activity,  $R M_i$  for capital cost of maintaining production activity.

When the batch is fix in the formula (3), break-even point in sales is calculated as follows.

$$Q = \frac{H + \Delta H + (B_0 + \Delta B_0) N}{P_U - (V_0 + \Delta V_0)}$$

Simply, we have

$$Q = \frac{H' + B_0' N}{P_U - V_0'} \quad (4)$$

When the batch is change with the volume and each batch volume  $Q_0$  is fix, the batch-level activity will be traced back to the related products as a reduction of the contribution. Break-even point  $Q$  is calculated as follows.

$$Q = \frac{H + \Delta H}{P_U - (V_0 + \Delta V_0) - (B_0 + \Delta B_0) / Q_0}$$

Simply, and obtain formula (5)

$$Q = \frac{H' + B_0'N}{P_U - V_0' - \frac{B_0'}{Q_0}} \tag{5}$$

Since basic assumption is consistent with previous example, so the structure is consistent with ABC-based CVP analysis. But measurement of cost of capital according to ABC method makes an increase on the basis of original increase. Thus, CVP graph structure is constant, but  $B_0N + H$  will parallel shift and  $TC$  slope will become larger.

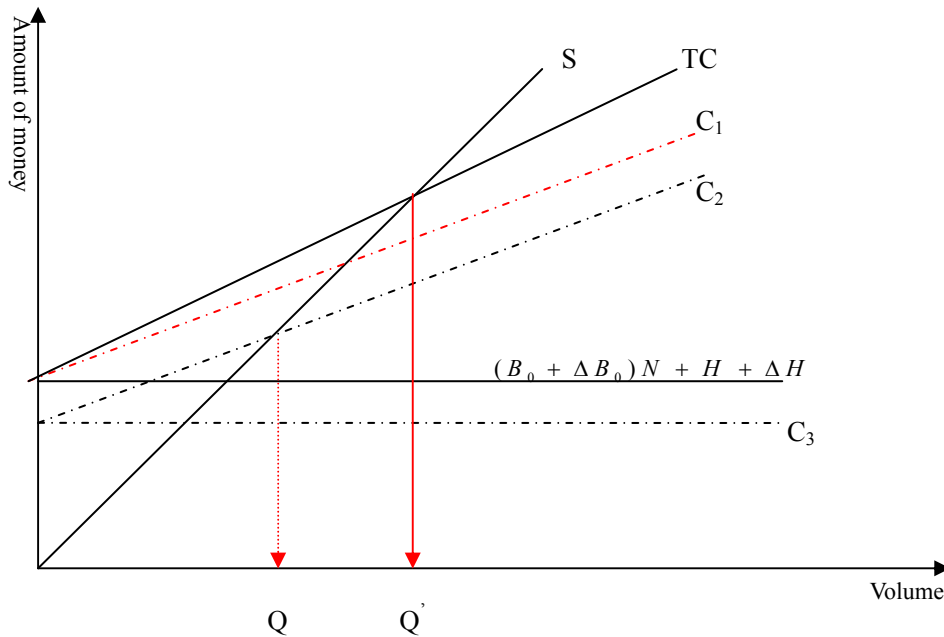


Figure 3. Change in break-even point under CVP analysis based on EVA-ABC

In Figure 3,  $S$  represents sales income,  $TC$  is for total costs,  $Q$  represents break-even volume under traditional CVP analysis based on ABC,  $Q'$  stands for new break-even volume under CVP analysis based on EVA-ABC,  $C_1$  represents virtual contrast line,  $C_2$  represents slope in the traditional CVP analysis based on ABC,  $C_3$  fix costs under traditional CVP analysis. It can be seen from Figure 3 that the break-even point in sales under CVP analysis based on EVA-ABC moved up.

### 3.4 Product Profitability Analysis System Based on EVA-ABC

Firstly, calculate operating profit, operating economic profit, profit adjustment coefficient, capital adjustment coefficient, economic return on equity and economic return on asset. Calculation processes of  $I$ ,  $EI$  and others are as follows.

$$I = \sum_i P_i - f - h_i = \sum_i (S_i - VQ - AC) - f - h_i \tag{6}$$

$$EI = \sum_i P_i - f - h_i - TR = \sum_i (S_i - VQ - AC) - f - h_i - TR \tag{7}$$

$$Adjukp = EI / I \tag{8}$$

$$Adjuka = AdjuNA / NA \tag{9}$$

$$EROE = EI / E \tag{10}$$

$$EROA = EI / A \tag{11}$$

In formula (6),  $I$  is the operating profit,  $P_i$  is for operating profit of product  $i$ ,  $AC$  represents total activities costs, In formula (7),  $EI$  is the operating economic profit,  $f$  stands for fixed costs that cannot be traced back to product,  $h_i$  is for amount current adjustment items shall be amortized,  $TR$  stands for capital cost. In formula (8),  $Adjukp$

stands for profit adjustment coefficient, and in formula (9),  $Adjuka$  is for capital adjustment coefficient.  $EROE$  represents economic return on equity,  $EROA$  stands for economic return on assets,  $E$  is for equity and  $A$  is for total assets.

Secondly, calculate the adjustment coefficients and ratios and make profitability analysis.

$$IMO = I / S \quad (12)$$

$$EIMO = EI / S = Adjukp \times IMO \quad (13)$$

$$IMO_i = P_i / S_i \quad (14)$$

$$EIMO_i = (P_i - TR_i) / S_i \quad (15)$$

$$\begin{aligned} EROE &= EROA \times Adjum \\ &= EIPO \times Adjut \times Adjum \\ &= Adjukp \times IMO \times (t \times 1 / Adjuka) \times m \times Adjuka \\ &= Adjukp \times IMO \times t \times m \end{aligned} \quad (16)$$

In formula (12),  $IMO$  stands for operating profit margin, and  $EIMO$  for operating economic profit margin in formula (13).  $IMO_i$  stands for operating profit margin of product  $i$ ,  $EIMO_i$  is for operating economic profit margin of product  $i$ . In formula (16),  $Adjum$  stands for the adjusted equity multiplier,  $Adjut$  said adjusted asset turnover,  $m$  is equity multiplier,  $t$  for asset turnover. From the formula (16), we can see the profit adjustment coefficient is the fundamental factor that affects the final results. So the key to correctly analyze enterprise profitability is accurate calculation of the profit adjustment coefficient.

On the basis of the superiority of introducing activity-based costing methods and ideas of economic value added, the improved profitability analysis system takes  $EROE$ ,  $EROA$  and  $EIMO$  as its main indicators. Under the system, computing cost through ABC method and tracking indirect expense to the product which is different from the traditional simply being allocated according to the working hours and output stages drivers calculation method can correct the distortions of traditional methods which overestimate the cost of high-volume and underestimate the cost of low production. As a result, further derived operating profit margin is different from the traditional where the ABC's improvements to new system are. Whilst introducing EVA brings equity capital cost into calculation and improves the cost information. The improvements on new system are reflected in the different performance between operating economic profit margin and operating profit margins, comprehensively reflected by profit adjustment coefficient which is the ratio of operating economic profit margin to main operating profit margins. In the new system, profit reflects not only the traditional method of production costs but also opportunity cost enterprises occupy, that is the cost of capital. Thus the calculation of the profit will be more accurate. It can determine whether the enterprise create value for shareholders by contrasting the total indicators and zero.

#### 4. Case Study

A clothing production enterprises mainly produce suits and jackets, the income of suits reached 3180000, sales reached 1200 and direct cost is 1036800. The income of jackets reached 1400000, sales reached 700 and direct cost is 302400. Enterprise's R & D expenditures is \$ 500,000 and provision for bad debts is \$ 68,700, of which 47,700 belongs to suits and other \$ 21,000 belongs to jacket. And debt interest rate is 6.5%, equity capital ratio is 12%. Its main financial information is as follows.

Table 1. Balance sheet

assets		liabilities	
cash	2,432,000	accounts payable	892,800
receivables	1,717,500	short-term borrowing	3,000,000
fixed assets	8,299,000	long-term borrowing	4,000,000
inventories	1,000,000	total liabilities	7,892,800
		capital	3,500,000
		capital reserve	
		retained earnings	2,055,700
		total owners' equity	5,555,700
total assets	13,448,500	total liabilities & equity	13,448,500

In addition, the indirect costs of jackets and suits are allocated based on machine hours. The cost of suits is 1,932,890 dollar and the cost of jackets is 864,454 dollar in the traditional costing methods according to the cost accounting information.

Firstly, to clarify activities and determine measurement basis according to the above cost model. a total of 14 activities are identified, specifically including (1) preparing materials (2) making samples (3) procuring materials (4) production preparation (5) cutting fabric(6) sewing pieces front and back by machine (7) machining collar (8) machining sleeve (9) holding buttons by hands (10) nailing clasps by hands (11) testing (12) workshop management (13) packaging, (14) after-sales services. Activities are analyzed and consolidated according to the principal of quantity homogenization, and 8 activity libraries are established. During the period, total indirect cost is 1,440,144. Ratios of various activities sharing indirect costs and occupying capital and other related information are shown in Table 2.

Table 2. Related information of activities

libraries	first	second	third	fourth	fifth	sixth	seventh	eighth
activity details	(1),(2)	(4)	(3),(4),(5)	(6),(7),(8)	(9),(10)	(11)	(13)	(12)
ratios of indirect cost (%)	9	3	20	25	12	9	7	15
ratios of capital (%)	5	3	15	20	8	5	4	32

Secondly, calculate activity cost. The first step is to work out indirect cost every library should share through multiplying total indirect cost by ratios of various activities sharing indirect costs, expressed in matrix  $C=[c_1 \ c_2 \ \dots \ c_8]^T$ . Matrix of activity motivation is expressed in  $D=[d_1 \ d_2 \ \dots \ d_8]^T$ . Thereby, the matrix of the activity distribution ratio is worked out as:

$$DC=[c_1/d_1 \ c_2/d_2 \ \dots \ c_8/d_8]^T \quad (17)$$

The activities volume  $q_{ij}$  is expressed as matrix  $Q$  meaning volume of activity  $j$  product  $i$  consume, and activity cost as  $AC=Q \times DC$ . Then bring in data to gain:

$$AC=\begin{bmatrix} 3 & 1 & 3 & 2800 & 8000 & 94 & 60 & 318 \\ 5 & 0 & 8 & 1700 & 6080 & 82 & 35 & 140 \end{bmatrix} \times \begin{bmatrix} \frac{1440144 \times 9\%}{8} & \frac{1440144 \times 3\%}{1} & \frac{1440144 \times 20\%}{11} & \frac{1440144 \times 25\%}{4500} & \frac{1440144 \times 12\%}{14080} & \frac{1440144 \times 9\%}{176} & \frac{1440144 \times 7\%}{95} & \frac{1440144 \times 15\%}{458} \end{bmatrix}^T$$

$$=[775460 \ 664684]^T$$

So activity cost of suits is \$775,460, and activity cost of jackets is \$664,684.

Thirdly, calculate capital cost. Capital cost contains two items of one caused from activities occupying and the other caused form direct materials occupying. activity capital cost  $CC$  is computed as in formula (18).

$$CC = WACC \times Q \times DA \quad (18)$$

According to ACD calculation method, volume of activity capital matrix  $A=[a_1 \ a_2 \ \dots \ a_8]^T$ , distribution rate

matrix of volume of activity capital  $DA=[a_1/d_1 \ a_2/d_2 \ \dots \ a_8/d_8]^T$ , adjusted total capital ( $AdjuNA$ ) is 12,624,40 and

the weighted average capital cost( $WACC$ )is 8.15%,  $CC$  is calculated as follow.

$$CC = 8.15\% \times \begin{bmatrix} 3 & 1 & 3 & 2800 & 8000 & 94 & 60 & 318 \\ 5 & 0 & 8 & 1700 & 6080 & 82 & 35 & 140 \end{bmatrix} \times$$

$$\left[ \frac{12624400 \times 5\%}{8} \quad \frac{12624400 \times 3\%}{1} \quad \frac{12624400 \times 15\%}{11} \quad \frac{12624400 \times 20\%}{4500} \quad \frac{12624400 \times 8\%}{14080} \quad \frac{12624400 \times 5\%}{176} \quad \frac{12624400 \times 4\%}{95} \quad \frac{12624400 \times 32\%}{458} \right]^T$$

$$= [549127 \quad 397450]^T$$

Similarly, capital cost of direct materials  $VC$  is worked out.  $VC = [57150 \quad 25160]^T$ , Therefore, total capital cost equals to  $CC + VC = [606278 \quad 422610]^T$ .

Finally, calculate  $IMO_i$ ,  $EIMO_i$ , adjustment coefficients and related ratios to make profitability analysis. Based on the above information and the results are shown in Table 3.

Table 3. Results

items	$IMO_i$	$EIMO_i$	$EROE$	$EROA$	$m$	$t$	$IMO$	$EIMO$	$Adjukp$
suits	44.09%	25.03%	11.84%	4.81%	2.42	0.34	36.59%	14.12%	0.3860
jackets	28.47%	36.59%							

According to the calculation results above, the distortion rates resulted from the traditional cost of jackets and suits are respectively -6.66% and 12.47%. It's mainly because indirect cost is apportioned by simple working hours or machine hours proportion under traditional accounting method. During link of production preparation, preparation times of high-yield suits are less than jackets', but the cost is not allocated in accordance with the consumption of resources. Similarly, links of preparing materials and others are also the same. Thus, result in an overestimation of the cost of high-yield suits and underestimated of the low production costs of jackets. This distorts product information seriously and affects the accuracy of product operating profit.

The misleading to profit of traditional method isn't conducive to enterprise profitability analysis of operating, resulting in the decision-making errors. As top-level data sources of profitability analysis, it will also impact on operating efficiency and performance analysis. According to EVA-ABC based cost calculation which considers capital cost, profit margin of suits decreased by 43.24%, and jackets' reduced 106.04%. Although suits' is still higher than jackets', jackets' profit margin has dropped to -1.73%, that indicates production of the jackets is not only can't create value but damage shareholder value. In contrast with other methods, traditional method can not reveal the true profitability of products, which leads to a series of mistakes cost analysis and product pricing, thereby misleading operating decisions and missing market opportunities.

In terms of capital structure, equity multiplier is 2.42, indicating the enterprise's financing policy is conservative and financial risk is low. However, it results in the higher weighted average capital cost so that profits significantly decline after considering the cost of capital. Therefore, an appropriate increase in borrowing to seek a better capital structure shall be a better choice.

Taking perspective of  $ROA$ ,  $EROA$  is 4.81%, and  $EIMO$  is 14.12%, while asset turnover  $t$  is only 0.34, which is the direct cause of low  $EROA$ . One hand, enterprises can expand production to increase income, but at the same time need to avoid the risk of increasing bad debts caused by credit policy easing. So it must pay attention to strengthening management of accounts receivable while expanding revenue. On the other hand, enterprises should strengthen assets management as cleaning up inefficient assets timely and maintaining regularly to guarantee operating efficiency of assets.

From the view of main business,  $Adjukp$  is as high as 0.3860, indicating that capital cost has an important effect on profits. Capital cost is jointly determined by the weighted average capital cost rate and the volume of capital occupied, analyzing combined with the above low-down asset turnover, we can see that activities take up majority assets. This implies that the enterprise is likely to have the matter of excess production capacity. Therefore improving production efficiency and developing new markets to make full use of the production capacity is the most effective way to solve the problem of profitability.

## 5. Conclusion

An excellent financial management analysis system must be able to analyze and evaluate profitability correctly. Under the goal of maximizing shareholder value, companies most concerned about are assets, value and the ability of creating value. EVA-ABC based profitability analysis system draws EVA's advantages on performance



evaluation, and effectively reduces the distortions that traditional accounting indicators affect economic efficiency. Besides, it overcomes the disadvantage that EVA as an absolute indicator can't directly be applied to comparing two different scale enterprises or investing centers to truly reflect enterprises' performance. Meanwhile, it takes full use of ABC's advantages of tracking costs to products by motivation in cost calculation and control, revealing distinctions among value-added activities, non-value added activities, available resources and actual needed resources. Thus, the improved new system can provide useful information for improving activity management and optimizing resources allocation, and contributes to correctly evaluating product's profitability and improving product pricing decisions, providing accurate information for whether discontinuing old products or introducing new products and sales guidance. EVA-ABC based profitability analysis system is consistent with the goal of maximizing shareholders value. It possesses necessary conditions a good financial management analysis need and provides objective analysis basis for operating performance measurement and strategic decision-making.

EVA-ABC based profitability analysis system also has some limitations. In the capital market environment, weighted average capital cost which is one necessary indicator for the calculation of capital cost is difficult to define, and accounting items needed to adjust according to EVA are more and the process in practice is complexity to some extent. Also, calculation based ABC method has some difficulty in the implementation since current enterprises' cost accounting systems lack necessary cost management data. Therefore, it needs further research on how to guarantee successful implementation of the EVA-ABC based profitability analysis system and coordinate relationship between parties.

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