International Core Journal of Engineering Volume 7 Issue 8, 2021
ISSN: 2414-1895 DOI: 10.6919/ICJE.202108_7(8).0066

Application of Operation Cost Method under Industry 4.0

--Taking A Garment Manufacturing Enterprise as an Example

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Abstract

With the rapid development of information technology, now the industrial revolution is entering the 4.0 era. However, few literature involves a discussion on the management of manufacturing production costs under Industry 4.0. Therefore, under the background of Industry 4.0, the Chinese clothing manufacturing industry as an example discusses the advantages of operating cost method in the garment manufacturing industry and risk countermeasures.

Keywords

Industry 4.0; Operation Cost Method; Clothing Manufacturing Industry.

1. Implementation Background of China Operation Cost Law under Industry 4.0

In 2013, at Hannover Industrial Expo, Germany officially launched the concept of "Industry 4.0". In order to adapt to the development of Industry 4.0 era, the State Council issued the Made in China 2025 in May 2015, comprehensively promoting the implementation of the strategy of manufacturing power, and the intelligent level of machinery and fine management of China's manufacturing enterprises were continuously improved. The rapid popularity of automation equipment, labor was replaced by machines, and the depreciation of fixed assets led to a sharp increase in the proportion of manufacturing costs in the cost of goods.In today's increasingly fierce competition, how to accurately calculate the product cost, so that enterprises can get reliable profits, has become a problem facing and pay attention to by many manufacturing enterprises.

At present, most manufacturing enterprises in China still use the traditional cost method for cost accounting, but in the background of industry 4.0, compared with the traditional cost method with a single direct labor or machine labor allocation manufacturing cost, making the calculated cost distortion, which emphasizes motivation as the cost accounting orientation, namely "operation consumption resources, product consumption operation" as the cost calculation basis, improve the accuracy of cost calculation, and is conducive to enterprises ' pricing management and production decisions.

2. Literature Review

With the operation cost method introduced earlier in China, the definition of its connotation by domestic scholars is relatively perfect. Zhang Binghong [1] Starting with the basic theory of value chain cost management, it analyzes the production and operation of manufacturing enterprises. Shao Shenghua [2] The others analyzed the accounting process of operation identification, establishment of operation center, resource motivation analysis, resource cost allocation to operation cost allocation to cost objects and cost objects, made new thinking on the cost accounting of college education, and put forward the safeguard measures to promote the implementation of operation cost law in colleges

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and universities. Huang Qingshan [3] Others expounded the significance and status quo of the current college education cost accounting, analyzed the impact on the scope and method of college education cost accounting, and put forward the suggestions of implementing the college education cost accounting work under the government accounting system from the perspective of basic work, accounting environment and operating guidance. academia believe that work cost method can well solve the impact of indirect cost distribution on production costs and make enterprise cost accounting and management decisions more accurate. Therefore, it is necessary for China's manufacturing enterprises to put into use the operation cost method, not only to meet the development needs of The Times while making their own development to a higher level.

3. Application Background of Job Cost Method in A Enterprise

A company is a garment manufacturing enterprise, in order to enhance the brand clothing market share, last year introduced a new automatic clothing production line for production process of complex clothing and simple clothing, new production line of clothing more expensive than the old production line clothing materials, but although customer satisfaction is quite good, sales is very high, the company's total profit has declined. The survey found that after the introduction of a new production line, the proportion of manufacturing costs in garment A increased significantly, but the traditional cost method is still adopted for the cost accounting of garment A, which is bound to cause distortion and affect the management's decision.

4. Application of Job Cost Method in A Enterprise

In view of the total profit decline of A enterprises, the traditional cost method and the operation cost method are used respectively to analyze the profitability of the two products specifically.

4.1 Cost calculation under the traditional cost method

Table 1. A Enterprise Production Cost Data Sheet

	Party A:	Party B	Total:
Yield (in all parts)	10000	20000	30000
Direct Material (Yuan)	1180000	1260000	2440000
Direct labor (Yuan)	30000	50000	80000
Manufacturing costs (RMB Yuan)			7289400
Machine working hours (hours)	5000	15000	20000

A enterprise distributes manufacturing expenses by machine hours. See Table 2 for calculation results of different series of A and B under the traditional cost method.

Table 2. A Enterprise Product Costing Table under the Traditional Costing Method

	Party A:	Party B	Total:
Direct Material (Yuan)	1180000	1260000	2440000
Direct labor (Yuan)	30000	50000	80000
Machine working hours (hours)	5000	15000	20000
Manufacturing cost distribution rate	364.47	364.47	364.47
Manufacturing costs (RMB Yuan)	1822350	5467050	7289500
Total:	3032350	6777050	9809400
Yield (parts)	10000	20000	30000
Unit Product Cost (RMB Yuan)	303.24	338.85	

A companies priced clothing by the cost plus method, with a plus rate of 130%. According to the data of Table 2, A is priced 394 yuan and B 440 yuan. A garment clothing has complex process and large input cost, however, the unit cost price of its traditional cost method is lower than that with simple

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process. In order to introduce new equipment in production A clothing, the depreciation cost of fixed assets is higher, and the indirect cost of manufacturing cost with machine hours is not conducive to the reasonable pricing of A Company.

4.2 Cocalculation under Operation Cost Method

A, according to its own operation and resource allocation, divides its operations into: production preparation, equipment debugging, machine processing, receiving finished products, product testing, packaging design, quality assurance, packaging and distribution. See Table 3 for the specific costs of each operation center.

Table 3. Cost Collection Table of A Enterprise Operation Center

Manufacturing expenses	Amount (RMB Yuan)
Production preparation	4000
Equipment commissioning	666000
Machining	2380000
Receiving the finished product	1500000
Product testing	227400
Packaging Design	1400000
Quality assurance	840000
Package & Shipping	272000

Determine the corresponding operation factors according to the operation characteristics of each operation cost database. Production preparation with the product batch as the allocated driver, the equipment commissioning as the allocation factor, the machine hour, the received finished product as the distribution factor quantity, the product testing as the allocation batch number, the product type as the packaging design, the quality packaging as the allocation factor, packaging and shipment as the number of distribution batches. Calculate the job cost allocation rate, according to the original data of the work center (see Table 4),

Table 4. Job Allocation Table of Various Products of A Enterprise

Job Cost Library	Operation driver	Operation quantity			Motive factor allocation rate	Operating cost (RMB Yuan)		
		Party A:	Party B	Total:		Party A:	Party B	Total:
Production preparation	Product batch (batch)	2	3	5	RMB 800 / batch	1600	2400	4000
Equipment commissioning	Deof times (times)	36	75	111	RMB 6,000 / time	216000	450000	666000
Machining	Machine Hours (When)	8000	26000	34000	RMB 70 Yuan / Time	560000	1820000	2380000
Receiving the finished product	Product Quantity (desk)	10000	20000	30000	RMB 50 / table	500000	1000000	1500000
Product testing	Number of detected batches (batches)	120	480	600	RMB 379 / batch	45480	181920	227400
Packaging Design	Product Type (Class)	400	1000	1400	RMB 1,000 / Class	400000	1000000	1400000
Quality assurance	Guaranteed times (times)	25	35	60	RMB 14,000 / time	350000	490000	840000
Package & Shipping	Number of shipping batches (batches)	46	90	136	RMB 2,000 / batch	92000	180000	2712000
Total:						2165080	5124320	7320000

By comparing Table 4, Table 2, there is a great difference between the manufacturing cost distribution and the traditional cost method, as shown in Table 5.

Table 5. Manufacturing Expenses allocated by Products A and B under Two Cost Methods

Cost sting method	Party A (RMB Yuan Yuan)	Party B (RMB Yuan)
Traditional cost method	1822350	5467050
Work Cost method	2165080	5124320

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The traditional cost method of Company A introducing new equipment is RMB 1822,350, and the operation cost method is RMB 216,508. The manufacturing cost of Party B clothing under the traditional cost method is RMB 5,467,050, and the operation cost method is RMB 5,124,320.

For the operation costs collected by Table 4, calculate the respective unit costs of Party A and Party B under the operation cost method, and refer to Table 6.

Table 6. A Enterprise Product Costing Table under Operation Costing Method

	Party A:	Party B	Total:
Direct Material (Yuan)	1180000	1260000	2440000
Direct labor (Yuan)	30000	50000	80000
Manufacturing costs (RMB Yuan)	2165080	5124320	7289400
Total:	3375080	6434320	9809400
Yield (parts)	10000	20000	30000
Unit Product Cost (RMB Yuan)	337.51	321.72	

A companies priced clothing by the cost plus method, with a plus rate of 130%. According to the data in Table 6, the price is RMB 439 and clothing B is RMB 418. Compared with the traditional operating price method, A clothing pricing rose by 11.42% and B clothing pricing fell by 5%. A clothing belongs to small quantity, complex process, B clothing belongs to large quantity and simple process, if only accounting according to the traditional cost method will lead to A cost to be underestimated and B cost is overvalued.

Through the previous analysis and calculation, we can conclude that the traditional cost method can no longer meet the accounting of product cost of A enterprises, and the operation cost method can better restore the real cost of the product, which is conducive to commodity pricing and management decision-making.

5. Advantages of applying the Job Cost Method

Using the operation cost method, each production activity of the A enterprise is divided into several operations, and determine the corresponding cost factor and cost factor rate of each operation based on the operation, and finally find the indirect cost of each product through the cost factor rate. By comparing the product cost under the two cost methods, it can be seen that the operation cost method considers the actual situation of each product production link, and thus makes the calculated indirect cost closer to the real data and the product information more accurate.

In the actual operation process, the operation cost method can obtain more accurate cost information for A enterprises, which can better help enterprise managers to choose more profitable orders. Secondly, the accuracy of operation cost method cost can also better price products for enterprises. Therefore, the implementation of the operation cost method will be conducive to A managers to make reasonable business decisions.

In the process of implementing the operation cost method, A can understand and focus on the resources consumed by each specific operation, appropriately improve for those operations with small resource consumption and large resource value, and appropriate control for operations with large resource consumption and small appreciation should be conducted, so as to make the company's resources utilization more reasonable and thus reduce the waste of enterprise resources.

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