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COMPARISON OF CALCULATION METHODS IN THE FORMATION OF PRODUCT PRICING

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ABSTRACT: Creation of calculated price of products in small production firms is very different. Today is custom manufacturing very extended and therefore is creation of calculated price important. In praxis we will use some methods of calculation. Very often are used traditional methods by percentage but in small firms doing not use these methods correctly. Small manufacturers do not create calculated price on the ground of using modern instruments for creation of price and calculated price does not include all costs for custom manufacturing. In this article we point out that the creation of price is very important for small manufacturers because the price of product affects their business. Calculated price that it does not include all costs of product, it can reduce profit or it can bring insolvency in the firm. We can create the calculated price of competitive price, of customer price, of actual costs of order. We solved problem of calculated price of product in custom manufacturing of furniture because this firm has a big problem with liquidity and it can not to pay its debts. We will evaluate calculated price in custom manufacturing of furniture and we will evaluate influence of this calculated price on product and impact on expenses and profit.

KEYWORDS: price, costs, product, profit, calculation

INTRODUCTION

In praxis we will use some methods of calculation. Very often are used traditional methods by percentage but in small firms doing not use these methods correctly. Creation of calculated price is very different in custom manufacturing. Small businessmen define different valuation methods of products in production of product, they product by customer's requests. The price is important factor for customer and very important key factor for successful order. Custom manufacturing needs to change the creation of calculated price of products and the calculated price must accept competition and customer requests. [2, 3] We can create the calculated price of competitive price, of customer price, of actual costs of order.

GOAL OF PROJECT

We solved problem of calculated price of product in custom manufacturing of furniture because this firm has a big problem with liquidity and it can not to pay its debts. We will evaluate calculated price in custom manufacturing of furniture and we will evaluate influence of this calculated price on product and impact on expenses and profit.

ANALYSIS OF PROJECT

Costs of product create the base of sale price. The final sale price depends to relationships between seller and purchaser. This sale price depends on a lot of factors e.g. quantity of production, relationships

between purchasers, competitive offers. The sale price must create maximum economy profit.

In praxis firm offers two ways of products: products produce by own production activities and products that are buying for order. This firm has custom manufacturing of furniture because it produces order by customer requests. This firm produces different products or little series of products.

The calculated price determines the price of one order and all costs of this order. This firm creates calculated price from direct material, direct lower and manufacturing overhead by the index, that it was intended for base analyses from last years. This access deck minimal cost of order and it contain profit.

Calculation of less difficult order determines by following formula:

Costs of direct material on order \times index 2

Calculation of difficult order determines by following formula:

Costs of direct material on order \times index 2,5

The firm buys products, that it does not produce and it sales this products by 20 % surcharge to final customer. This creation of calculated price is very easy and fast and it is her advantage.

Disadvantage is fact that this calculated price does not contain all real costs of order and this price does not make provision for customers and price on

market and competitive price. This calculated price does not contain all the costs of order. This calculation method can present distorted fact for example price or effect of the firm.

CHARACTERISTIC OF PROJECT

We can calculate kitchen unit (figure 1) as one complete order. The price of this order is created by the firm method through index. Creation of the calculated price will be realize by direct costs of material and index 2,5 because this order is difficult to produce.



Figure 1: Kitchen unit - product of calculation

Table 1: Calculation of kitchen unit

Costs	v €
Direct material	750,24
Different material 20% surcharge	863,92
Overhead charges k=2,5	1125,36
Costs of product	2739,52

Source: own source.

Table 2: Calculation of direct material

Type of material	Consumption	Price in €/unit	Final price
DTD	31 m ²	8,96	277,76
ABS 22 x 2 mm,	80 m	0,66	53,11
ABS 42 x 2 mm		1,33	0
DTD 16 mm	2 m ²	5,97	11,95
Stripe	4 m	0,66	2,66
Sololit	11,6 m	2,99	34,65
Work desk	2 ks	69,71	139,41
HPL stripe	1,5 m	0,83	1,24
Screen		82,98	0
Skirting legs 10 cm	28 ks	0,56	15,68
Suspender I	28 ks	0,52	14,56
Suspender II		0,56	0
Suspender 45°	4 ks	1,13	4,51
Suspender		1,26	0
Suspender		3,52	0
Set square	16 ks	0,27	4,25
Piston		9,63	0
Suspension		2,32	0
Skep 15	1 ks	63,07	63,07
Tandembox 45 cm		31,87	0
Tandembox 45 cm with 1 relingom		36,91	0
Tandem 50 cm		12,74646	0
Portable 45 cm	1 ks	1,26	1,26
DTD	10 m ²	8,3	82,98
ABS 22 x 2 mm,	65 m	0,66	43,15
Total costs:			750,24

We prepared calculation to order - kitchen line by valid methodology that the firm uses. Direct material is presented in table 2, other material is presented in table 3, this material is higher about 20 % surcharge, because it is material, that the firm buy this material through provider, it is not material produced by firm. Overhead charges in the firm contain item of job costs that are inclusive activities as measuring, import, installation of kitchen link and other overheads charges consumption near production order.

General calculated price of this product is 2739,52 € with application of method, that the firm use. This calculated price is price of order and together with value added tax creates final price for customer.

This price consists of direct material 750,24 €, different material 863,92 € and overhead charges 1125,36 € (direct material x 2,5 + different material - it is costs of product and this price - direct material and different material is overhead charges).

Table 3: Calculation of different material

Type of different material	Amount	Price per unit	Total costs in €
Dustbin	1 ks	150,2	150,2
Wash bowl BLANCOTIPO 9E	1 ks	133	133
Tandembox 50 cm	4 ks	31,87	127,46
Tandembox 50 cm with 1 relingom	3 ks	28,60	85,80
Glass	0,9 m ²	79,67	71,70
Sharping	6 ks	3,98	23,90
Clip anchor 12111	5 ks	4,98	24,90
Clip anchor 12939	21 ks	2,66	55,77
AVENTOS HKS	2 ks	23,6	47,20
Total costs:			719,93
Price with 20 % surcharge			863,92

APPLICATION OF JOB-ORDER METHOD OF CALCULATION

Job-order method of calculation utilizes all firms that are oneself dealt by piece production or short-run production. It is a production process where the product is produced by individual customer's requests. This job-order method detects costs on concrete order, because every order has different requests. With application of job-order method of calculation we can obtain actual costs for calculated price of product.

We can get relevant information about using methods and we can confirm correct methods of calculation when we compare method with index in the firm and job-order method of calculation. [1,7] Following job-order method of calculation, which is going out of items of costing formula, we are found actual costs to one order. Calculated price is 3017,48 €, what it introduces increasing about 277,96 € as that of method using index.

We can confirm the fact, that this method using index is not useful to calculate costs of product because it does not contain all information and items of calculated price. This calculated price does not contain item of value added tax and profit.

Table 4: Calculation of order by job-order method

Structure of costs	v €
Direct material	1614,16
Direct wage	286,00
Different direct costs 13,4%	38,32
Overhead charges	1 079,00
Total costs	3017,48

Steps of account calculated cost on order [6]:

- **Determination of direct material** is located on the ground of actual consumption of direct material that the order needs. For kitchen unit is direct material in table 2 and the different direct material in table 3 without 20 % surcharge.
- **Determination of direct wage** - Two employers will make order - carpenters. The work effective fond of one employer is 1920 hours by 40 hours for week. Total annual work plan for two employers will be 3 840 hours. The base pay for one employer is 370 € and daily work one employer 8 hours, his average wage for month is:
- **Average wage** = (total wage/ the number of time usage) / time usage for day = $(370 / 21) / 8 = 2,20 \text{ EUR / hod}$
- The order realized two employers together 130 hours by average wage 2,20 €/hours.
- **Direct wage together** = $130 \times 2,20 = 286, \text{ EUR}$.
- **Determination of different direct costs** is formulated in percent of direct wage.
- **Determination of overheads charges on order** - we use total overheads charges from financial accounting of the firm. This value is 207 265 € in table 4.
- The account we make by overhead rate that is determined as ratio total costs to total time usage on order. The time usage for one year for all employers is 24 960 hours.
- **Hour overhead rate** = $\frac{\text{total overheads charges}}{\text{time usage for one year}} = \frac{207265}{24960} = 8,30 \text{ EUR / hod}$.
Than costs of one order are 8,30 EUR/hour x 130 hour = 1079 €.

Table 5: Structure of overhead costs.

Overhead charges	v €
Leasing	24 852,-
Depreciation	34 477,-
Expenditure of energy	7 800,-
Overhead material	60 578,-
Fuelling	5 831,-
Repair and maintenance	2 877,-
Lowers	17 280,-
Insurance	26 250,-
Communications	3 923,-
Other services	21 620,-
Taxes and fees	1 777,-
Total costs	207 265,-

CONCLUSIONS

We determined by comparing of method by index and job-order method, that the order of kitchen unit was produced with loss, because the calculated price by index method was lower as calculated price by job-order calculation about 277,96 €.

The firm did not accept actual overhead charges by enumeration and than the calculated price was lower as actual calculated price. Calculated price 2739,52 € uncovered total cost and profit for product and index is defined incorrect.

Table 6: Comparison of calculated price

Structure of cost	Calculation by index	Job-order calculation
Direct material	750,24	1614,16
Direct wage		286,00
Different direct costs	863,92	38,32
Overhead charges	1125,36	1 079,00
Total costs	2739,52	3017,48

We can state following comparison of calculation methods that it will be better for the firm to use job-order calculation and the calculation method by index is not convenient for the firm.

Therefore we recommend for the firm to use job-order calculation for kitchen unit, because this calculated price contains all actual cost of product, to reevaluate index of calculation, because this index must accept profit and all costs of product, to revalue system of cost evidence, to introduce new way of cost accounting, that it would allow more detail of individual expenses items, that it would allow new application of calculated price, to monitor prices on competitive market, demand and rate after products in furniture manufacturing.

Pricing of product is very important part of managerial accounting in the firm. Every firm must prepare relevant calculation for product because the price of product is financial indicator of profit. By the pricing we must accept all costs of product and the price must be accepted by customer.

The change of pricing is instrument for continual improvement in the firm. This is a new approach named Kaizen. [5] Kaizen use improvement in all area of the firm and the pricing is one possibility how to change the calculated price for customer and firm.

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REFERENCES

[1.] FOLTÍNOVÁ, Alžbeta a kol.: Nákladový controlling. Bratislava: SPRINT, 2007. 451 s. ISBN 978-80-89085-70-5.

[2.] JANOK, Michal: Nákladové a cenové kalkulácie. Bratislava: 1. vyd. MIKA Konzult, 2002. 228 s. ISBN 80-968504-2-3.

[3.] KOSTKOVÁ, Albína - LAJOŠ Branislav: Ako kalkulovať a rozpočtovať v podniku. Bratislava: 1.vyd. Ekonóm, 2008. 144 s. ISBN 978-80-225-2627-2.

- [4.] RAJŇÁK, Milan a kol.: *Cenové rozhodovanie*. Bratislava: 3.vyd. SPRINT , 2007. 236 s. ISBN 978-80-89085-89-7.
- [5.] ŠOLC Marek, SUTOOVÁ Andrea, MIKLOŠ Vojtech.: *Trvalé zlepšovanie organizácie pomocou nástroja manažérstva kvality Kaizen*. In: *Kvalita a spoľahlivosť technických systémov: zborník vedeckých prác* : 22. - 23.5.2012, Nitra. - Nitra : SPU, 2012 S. 103-108. ISBN 978-80-552-0798-8.
- [6.] TEPLICKÁ, K.: *Základy manažérskeho účtovníctva*. Košice: 1.vyd. Edičné stredisko, Fakulta BERG TU v Košiciach, 2009. 99 s. ISBN 978-80-553-0277-5.
- [7.] TUMPACH, M.: *Manažérske a nákladové účtovníctvo*. 1. vyd., Bratislava: Ekonómia, 2008. ISBN 978-80-8078-168-2



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