Model of indirect Expenses Distribution for Determining Economies of Scale

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Abstract. Changing economic environment, innovative production technologies and the need to obtain relevant information in decision-making, management determines the organizations to seek different approaches to identify economies of scale. Economies of scale are manifested as an effect of cost reduction. The article proposes a comparative analysis of two methods of establishing costs that allow the identification and quantification of economies of scale. The research proposes a distribution of indirect costs depending on the cause-effect relationship between activity and product. The research results show a cost difference in the case of implementing the Activity-based costing (ABC) cost system, thus recognizing the usefulness and compatibility of the method.

1 Introduction

Economies of scale are a feature of a cost function, which describes the impact on total production costs. The analysis of cost efficiency, factor productivity and economies of scale has identified how companies are affected by the current pandemic situation [1-2]. Profitability driven by economies of scale can lead to lower costs [3]. Increasing volumes of goods and services, made with a certain amount of labour and capital, have led to an increase in living standards through the efficient combination of resources [4]. An efficient configuration of the organization's resources can be monitored with the help of economies of scale. The efficiency of companies with high market authority can be achieved by setting up a price monopoly, but its implementation would trigger a reduction in efficiency [5-6]. The existence of economies of scale is dependent on a directly proportional increase in results, depending on the unitary increase in inputs [7]. Such wording indicates the reduction in unit cost obtained as a result of the increase in production [8-9].

Studies have indicated that market power is advantageous to induce economies of scale and would result in higher productivity [10-11]. The definition of economies of scale does not contain the effects of managerial decisions, which would have a major effect on operational characteristics. Economies of scale refer to changing the total cost for a certain value of production. If production doubles and costs increase by less than 100%, then the

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organization shows economies of scale, whether it has increased production by increasing productivity, investing in technology or increasing the size of production capacity [12].

2 Synthesis of the subject

Organizations are expanding to strengthen their power and achieve efficiency gains [12]. The lower costs are due to the increase in the size of firms, which achieve a multiplication of capital through economies of scale [13-14]. Although the importance of small organizations cannot be disputed, this sector has seen an increase in the number of firms and production, but also on an operational scale [15-17]. The emergence of economies of scale is chronologically different [18]. The standardized approach to cost function estimation excludes the possibility of inefficient production [19-20]. In terms of cost composition, some elements such as overhead and administrative costs show substantial economies of scale [21]. According to other researchers, economies of scale can be identified in the management of funds, and the achievement of economies of scale is directly proportional to the size of the market [22-23]. Companies investing in aspect technology can lead to inflexible behaviour, which prevents the adjustment of activity to demand and can lead to the emergence of economies of scale [24].

The complexity of activities in companies has led to the updating of traditional methods of cost calculation. A first limitation of these is the inability to identify sectors with costs and productivity independent of other sectors. Another vulnerability is given by the application of methods of redistribution of indirect costs based on the invariable inclusion of resource consumption in cost, which leads to the occurrence of undervaluation, overestimation or subsidization of costs. Another limitation of the traditional methods consists in the development of the support activities, the production of the companies being intensely conditioned by the downstream and upstream activities. With an increase in indirect costs, the traditional model leads to an inadequate relationship between them. Unable to establish a cause and effect relationship between cost and resources, leading to the need for further exploration by other methods [25].

One way to improve the cost system is through the ABC method, as it provides relevant information for decision-making, although it is more complex compared to traditional methods [26-27]. Some companies will be able to benefit from the formative effect of the method more than others [28]. There are several factors that can increase the likelihood of implementation: employee flexibility, management, full understanding of the method, support of companies by professional organizations and continuing education [29]. Operations that use costs for the purpose of generating value and operations that do not generate capital can be identified, thus helping companies to achieve and maintain a competitive position in the market as a whole [30-31]. The application of the method leads to benefits for companies, there is more empirical research on the implementation of the method among organizations [31-33]. Thus, the indirect costs attributed to the activities will be traceable and transparent, through cause-effect relationships, and the vision on operations is obvious [34].

The advantage of estimating the total logarithmic cost function is that it is an approximation of any general function, as it is based on an extension of the second-order Taylor series, as well as due to the influence on economies of scale. A normal distribution of the error term with average zero and constant variance is assumed [12]. Thus, a homothetic production structure is limited to homogeneity, if and only if the cost elasticity in relation to production is constant [36]. The translog cost function is considered, where the constraints, in order to be homothetic and homogeneous, will have the following form [12]:

$$TC = f(X, Z, P, T, F) \tag{1}$$

where TC is the total cost, X is a vector of input prices, Z is a vector of operating characteristics, P is a measure of the result, T is a vector of effects over time, and F is a vector of firm effects.

The use of such a model does not provide a perspective, if the outputs and the size of the network change by a disproportionate amount. As a result, a model of the following form can be used [37]:

$$TC = f(W, Y, T, F) \tag{2}$$

Another form of the production function can be considered the solution offered by a Cobb-Douglas production function, if the elasticity of the substitution is very close to the unit value, the case [38].

$$lnY = lnA_3 + \alpha_3 lnK + \beta_3 lnL + \chi_3 ln^2\left(\frac{K}{L}\right) \tag{3}$$

where Y represents the production (gross domestic product), K is the fixed capital, L the employed population, A_3, α_3, β_3 și χ_3 the parameters to be estimated.

Starting from the production function (3), the following form of the function was proposed by constraining $\alpha + \beta = 1$, the expression thus becoming a productivity function [39].

$$lnY = lnA_{\alpha_i \beta_i} + \sum_{i=1}^{n} \alpha_i \cdot lnX_i + \frac{1}{2} \cdot \sum_{i=1}^{n} \sum_{j=1}^{n} \beta_{ij} \cdot lnX_i \cdot lnX_j \tag{4}$$

The translog production function is a class of flexible functional form [40]. An advantage of the production function is that it does not accept rigid situations, such as the perfect substitution between factors of production or ideal competition in the market of factors of production [41]. Such a function allows the transition from a linear to a nonlinear relationship, and can be used to approximate the second order of a homogeneous linear output.

$$TC = f(X, P, T, F) \tag{5}$$

The input price factor (X) takes into account the price of raw materials, labour, transport, operating cost and administrative cost as input variables. These variables were selected because they are representative of society and do not have major corrections. However, the significant correlation becomes an issue in the translog model with the addition of second-order terms.

Relation (5) can be used to estimate the economy in scale E_s, or the impact on the cost of increasing production, while keeping input prices constant and allowing all other factors to vary.

$$E_s = \frac{1}{E_P}, \ RTS = \frac{1}{(E_P - E_{CPS})}, \ RTD = \frac{1}{E_P} \tag{6}$$

The elasticity of economies of scale E_s varies, when E_P is superunitary, unitary, respectively subunitary. The economies of scale in relation 7 are calculated as 1 minus the derivative of the logarithm of costs in relation to the derivative of the logarithm of production. A positive result indicates an increasing profitability, a negative result indicates scale diseconomies.

$$E_E = 1 - \frac{\delta lnC}{\delta lnP} = 0.022 \tag{7}$$

where: E_P elasticity of total cost with respect to output; E_{CPS} elasticity of total cost; RTS will refer to the impact on cost of increasing output and network size simultaneously; RTD will refer to the impact on cost of increasing output while holding network size; E_E elasticity of scale; P production sold and C costs.

3 Research organization

3.1 Determination of economies of scale by statistical method

In order to determine the economies of scale, the translog cost function was estimated for a company operating in Romania, Brasov County, which assembles locking systems, CAEN code 4618, 159 employees [42]. The company is characterized by a share of staff costs of 11%, raw materials 73% of the total cost, the difference being transport and administrative costs [42]. The translog cost function will be initially estimated using the Ordinary Least Squares Model (OLS) for a period of one year. The statistical calculations include the total cost of the periods subject to analysis 21596.90 lei, with a standard deviation of 217311.67 lei, considering all 30 products of the company (leu-Romanian currency). The standard deviation is shown because costs vary by product, while production averages 338.07 lei and a standard deviation of 951.83 lei.

Table 1. Statistical data.

Period	Variables	Average	Standard deviation
Total	Total cost	121596.90	217311.67
	Production	338.07	951.83
	Participation of cost entries		
	Raw material	88199.17	157623.44
	Labour force	13202.55	23652.19
	The cost of transport	1565.71	2811.57
	The real cost of operating the installation	15117.71	27019.77
	Administrative cost	1638.96	2984.05
I	Total cost	34369.53	76878.54
	Production	127.87	405.79
	Participation of cost entries		
	Raw material	25113.21	56173.81
	Labour force	3013.64	6740.98
	The cost of transport	566.61	1267.41
	The real cost of operating the installation	4480.30	10021.64
	Administrative cost	649.39	1452.58
II	Total cost	49966.14	89649.26
	Production	155.87	454.98
	Participation of cost entries		
	Raw material	36295.26	65120.96
	Labour force	5525.47	9913.80
	The cost of transport	565.02	1013.75
	The real cost of operating the installation	6476.18	11619.56
	Administrative cost	731.72	1312.86
III	Total cost	37261.23	85285.19
	Production	54.33	102.79
	Participation of cost entries		

Raw material	26790.70	61319.78
Labour force	4663.44	10673.89
The cost of transport	434.08	993.55
The real cost of operating the installation	4161.23	9524.42
Administrative cost	257.84	590.16

The data provided by the organization were statistically processed, in order to identify the type of economies of scale of the company (Table 1). In order to carry out the research, an interim balance sheet was prepared as follows: I (January-April), II (May-August), III (September-December).

Table 2. Results of the translog cost function with OLS.

Variable	Period		
	I	II	III
Production sold	0.11*	0.87	0.31
Raw material	0.12	0.9	0.3
Labour force	0.03	0.41	0.56
The cost of transport	0.99	0.59	0.36
Operating cost	0.12	0.88	0.14
Administrative cost	0.6	0.13	0.01
*p < 0,05			

In table 2 the data were statistically processed using the Excel program. The correlation between production and the number of employees is shown in Figure 1. Identifying the degree of association of the variables, in this case the result shows a perfect positive association. The linear relationship between the independent variable (number of employees) and the dependent variable (production) was highlighted with a linear regression equation. Bravis-Pearson correlation indices were used to express the causal relationship.
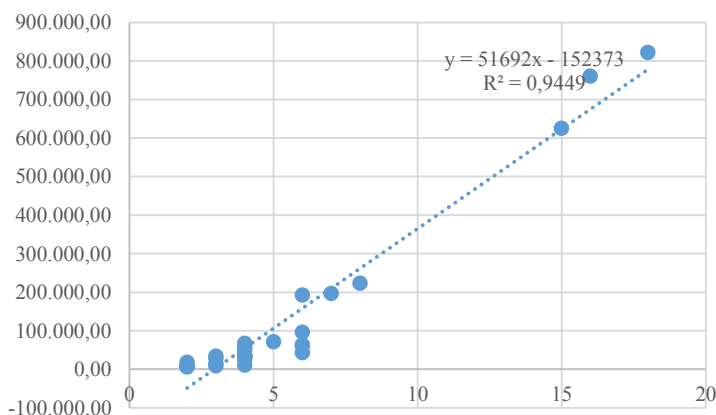
Fig. 1. The correlation between production and employees.

The graph shows a linear relationship between production and the number of employees. The correlation coefficient is 0.9449. It can be stated that approximately 94% of the production variation is explained by the participation of employees. In addition, for each increase in the number of employees (with one employee), the value of production increases by 51692 monetary units. For the null hypothesis there are no statistically

significant differences between the compared means, for the alternative hypothesis there are statistically significant differences between them, because the value of p is greater than 0.05. The calculations show that there are no statistically significant differences between the means compared with two exceptions. In the case of the average labour force in the first period compared to the second period, because p is 0.03, less than 0.05 there are statistically significant differences between the labour force in the first period and the labour force in the second period and in the case the average administrative cost in the second period compared to the third period, because p is 0.01, less than 0.05. The results indicate that the allocation of resources according to the models that rejected the null hypothesis in order to represent the production structure is indicated.

3.2 Determining the cost by the global method

The analysed company obtained during a management period, carried out during a year, 10142 pieces for which expenses of 20678674 lei were incurred. The standard cost used as a registration price is 2039 lei/piece. (20679538 lei - total standard cost). The statement of expenditure in the accounts is shown in Table 3 [39].

Table 3. Expenditures statistics.

Account	Expenses	Sum (lei)
601	Expenditures on raw materials	2085993
602	Expenses with auxiliary materials	157010
603	Expenses with wear of inventory items	294592
605	Energy and water costs	121288
611	Maintenance and repair costs	1539505
612	Rent expenses	4961177
621	Expenses with collaborators	139477
623	Protocol expenses	179928
624	Expenses for the transport of goods and personnel	88344
626	Postal and telecommunications charges	946508
627	Expenses with banking and similar services	623145
635	Expenses with other taxes and fees	325319
641	Staff remuneration expenses	6465940
6451	Expenditure on the unit's contribution to social and health insurance	1481064
6452	Unit contribution to the unemployment fund	323297
6811	Operating expenses on depreciation of fixed assets	946087
TOTAL		20678674

Table 4. Other expenses.

Expenses	Type	Sum (lei)
Expenditures on raw materials	Direct	2085993
Expenses with auxiliary materials	Direct	133459
Expenses with wear of inventory items	Indirect	15701
Energy and water costs	Administrative	7850
Maintenance and repair costs	Indirect	232728
Rent expenses	Administrative	61864
Expenses with collaborators	Indirect	82476
Expenses for the transport of goods and personnel	Administrative	38812
Protocol expenses	Indirect	1385554

Salary expenses	Administrative	153951
Expenditure on the unit's contribution to social and health insurance	Indirect	3720883
Expenditure on the unit's contribution to the unemployment fund	Administrative	1240294
Operating expenses on depreciation of fixed assets	Direct	139477
TOTAL	20678674	

Establishing the cost of production is achieved with the additional information forwarded by the production department summarized in Table 4 [42]. The sequence of accounting entry, between the two modes of accounting, revealed in the case of the calculation of actual cost, in which administrative expenses are not included in the cost, expenses of the period remain (not included in cost, in the balance of account 9240). Thus, the expenses that form the production cost are, in this situation, of 20668700 lei. It is observed that the value of the production cost is equal to the sum of the expenses from class 6, of 20678674 lei, from which the administration expenses 4174139 lei were eliminated.

Table 5. Production costs.

Products	Quantity manufactured	Unit cost (lei)		Machine operating (hour)
		Raw materials	**Direct labour**	
P1	237	608.77	216.78	0.01
P2	242	576.62	205.20	0.01
P3	1151	30.32	10.39	0.02
P4	507	521.98	184.30	0.03
P5	144	2051.41	733.64	0.02
P6	265	980.06	353.72	0.02
P7	420	288.57	102.65	0.01
P8	639	328.47	117.53	0.01
P9	639	219.90	78.23	0.02
P10	558	133.54	46.85	0.02
P11	230	540.82	193.05	0.02
P12	75	470.77	167.68	0.02
P13	276	575.22	206.02	0.02
P14	368	79.25	28.39	0.011
P15	679	1370.40	494.83	0.01
P16	1100	53.02	18.61	0.011
P17	1808	135.75	47.68	0.01
P18	311	83.91	29.88	0.02
P19	409	96.47	34.19	0.01
P20	340	115.36	41.36	0.02
P21	1082	760.10	272.53	0.02
P22	5302	493.41	175.29	0.02
P23	29754	107.07	38.19	0.05
P24	7571	106.62	38.54	0.02
P25	881	205.60	73.19	0.02
P26	282	12121.92	4346.69	0.03
P27	570	492.55	175.48	0.02
P28	967	413.01	148.46	0.015
P29	253	426.08	151.84	0.03
P30	1330	33.18	11.93	0.02

Following the cost calculation by the global method, the cost of the quantity of 10142 pcs. is 20668700 lei. The actual unit cost is 2037.93 lei/piece, if the product is registered in the accounting at a standard (default) cost. The cost differences between the calculated actual cost of 20668700 lei and the standard cost of 20679538 lei must be established. The cost difference -10838 lei is a saving because the actual cost is lower than the standard cost. Analysing the turnover of account 711, it is observed that it is equal to the credit turnover of account 902, resulting from the sum of the amounts registered on its credit of 20679538 lei. (registration of production at standard cost), and registration of cost differences being -5480 lei, respectively -10838 lei.

The value of the two accounts reflects, in fact, the actual production cost established in both variants, of 20674058 lei and 20668700 lei. The balances of the two accounts are equal and close to each other, reflecting the amount of administrative expenses not included in the cost of production.

Table 6. Indirect costs.

No.	Activity	Costs (lei)	Cost indicators
1	Reception of materials	141855.43	Number of material orders
2	Materials management	170226.53	Number of manufacturing orders
3	Launch assembly	217511.67	Number of assembly orders
4	Equipment department	293167.91	Machine operating hours
5	Quality control	122941.38	Number of manufacturing orders
Total		945702.92	

Table 7. Unit and global cost of production calculation.

Cost elements	Primary cost	Indirect cost	Production cost	Total cost
P1	825.55	4.71	830.26	196771.62
P2	781.82	4.71	786,53	190340.26
P3	40.71	9.42	50.13	57699.63
P4	706.28	14.13	720.41	365247.87
P5	2785.05	9.42	2794.47	402403.68
P6	1333.78	9.42	1343.20	355948
P7	391.22	4.71	395.93	166290.6
P8	446.00	4.71	450.71	288003.69
P9	298.13	9.42	307.55	196524.45
P10	180.39	9.42	189.81	105913.98
P11	733.87	9.42	743.29	170956.7
P12	638.45	9.42	647.87	48590.25
P13	781.24	9.42	790.66	218222.16
P14	107.64	5.18	112.82	41517.76
P15	1865.23	4.71	1869.94	1269689.26
P16	71.63	5.18	76.81	84491
P17	183.43	4.71	188.14	340157.12
P18	113.79	9.42	123.21	38318.31
P19	130.66	4.71	135.37	55366.33
P20	156.72	9.42	166.14	56487.6
P21	1032.63	9.42	1042.05	1127498.1
P22	668.70	9.42	678.12	3595392.24
P23	145.26	23.55	168.81	5022772.74
P24	145.16	9.42	154.58	1170325.18
P25	278.79	9.42	288.21	253913.01

P26	16468.61	14.13	16482.74	4648132.68
P27	668.03	9.42	677.45	386146.5
P28	561.47	7.06	568.53	549768.51
P29	577.92	14.13	592.05	149788.65
P30	45.11	9.42	54.53	72524.9
Total production cost				21625202.78

Indirect costs are included in costs as well as direct costs. These items of expenditure may be absorbed by the cost items and the cost allocation is based on an absorption basis (RAI) thus:

$$RAI = \frac{Total\ indirect\ costs}{Total\ machine\ operating\ hours\ (THFU)} = \frac{945702.92}{2.008} = 470.97\ (lei/hour) \tag{8}$$

$$THFU = \sum_{i=1}^{30} a_i * b_i = 2.008 \tag{9}$$

where a_i quantity manufactured, b_i machine operating hours, THFU total machine operating hours.

The calculation of the unit and overall cost of production was performed in Table 7. The cost of production is the sum of direct and indirect costs, and the direct cost consists of the cost of raw materials and direct labour [7].

$$C_p = C_d + C_i \tag{10}$$

$$C_d = C_{RM} + C_L \tag{11}$$

$$C_p = C_d + C_i \tag{12}$$

$$C_T = C_p * q \tag{13}$$

where C_p production cost, C_d direct cost, C_i indirect manufacturing cost, C_{RM} raw material cost, C_L labor costs and q quantity manufactured.

3.3 Determination of cost calculation by indirect cost absorption method and ABC method

The ABC method of calculating costs is used in different areas of activity due to the ability to organize cost accounting according to the activities of the organization. This method will identify the main differences in cost allocation and identify the reasons why the ABC method contributes to improving costing. The data provided by the organization are in table 7. According to the method, the enterprise is no longer considered a set of entities, but an accumulation of activities.

The products are assembled and then sold in batches of 120 pieces, and the orders of materials were 15 pieces for each type of product [42]. Indirect costs are absorbed in the cost of products according to the number of operating hours of the machines identified in Table 5. The calculation of the unit cost of inductors was performed in Table 8 [43] with respect to:

$$C_{ui} = \frac{Activity\ cost}{Total\ volume\ inductors} \tag{14}$$

where C_{ui} unit cost of inductors.

Table 8. Unit cost of inductors calculation.

Activity	Cost (lei)	Inductors	Inductor volume	C_{ui} (lei)
Reception of materials	141855.43	Number of material orders	980	144.7504
Materials management	170226.53	Number of manufacturing orders	990	171.9460
Launch assembly	217,511.67	Number of assembly orders	990	219.7088
Equipment department	293167.91	Machine operating hours	2008	146.0000
Quality control	122941.38	Number of manufacturing orders	990	124.1832

Calculation of unit and global production cost using relationships (Table 9):

$$C_P = C_d + C_i \tag{15}$$

$$C_d = (C_{RM} + C_L)*q \tag{16}$$

$$C_{EC} = C_{uif}*q*h \tag{17}$$

$$C_l = C_{uil}*\left(\frac{q}{n}\right) \tag{18}$$

$$C_R = C_{uir}*n_p \tag{19}$$

$$C_c = C_{uic}*\left(\frac{q}{n}\right) \tag{20}$$

$$C_{MM} = C_{uigm}*\left(\frac{q}{n}\right) \tag{21}$$

where: Cp production cost, C_d direct cost, C_i indirect manufacturing cost, C_{RM} raw material cost, C_L labour costs, q quantity manufactured, C_{EC} equipment cost, C_{uif} unit cost inductor machine operating hours, h operating hours of equipment/pcs., C_l launch cost, n number of units sold per lot, C_{uil} unit cost inductor launch in manufacturing, C_R reception cost, C_{uir} cost unit inductor material reception, n_p number of orders for each product, C_C cost control, C_{uic} unit cost inductor control, C_{MM} material management cost and C_{uigm} unit cost inductor material management.

4 Results

The paper presents the existence of economies of scale in an organization, confirming the initial expectations. The extension of the vision related to the relationship between production and production factors can be achieved by estimating the parameters of a translog production, thus making the transition from a linear to a nonlinear system. Accelerating the dynamics of factors of production, in order to increase the level of production, taking into account the context generated by a weak collinearity and an accelerated dynamics of the factor of production, will determine a subunit economy, while a sub-exponential dynamics will determine a economies of scale with a score higher than 1. The differences identified as a result of the allocation of costs by the two methods identify the best allocation of indirect costs (Figure 2). Comparative situation of unit costs, calculated by the two methods (Table 10).

These are due to indirect cost absorption conventions and can influence price if calculated on the basis of cost plus margin and can influence profit if the price level

influences sales and last but not least of the benefit if the level of stocks fluctuates from a period to period.
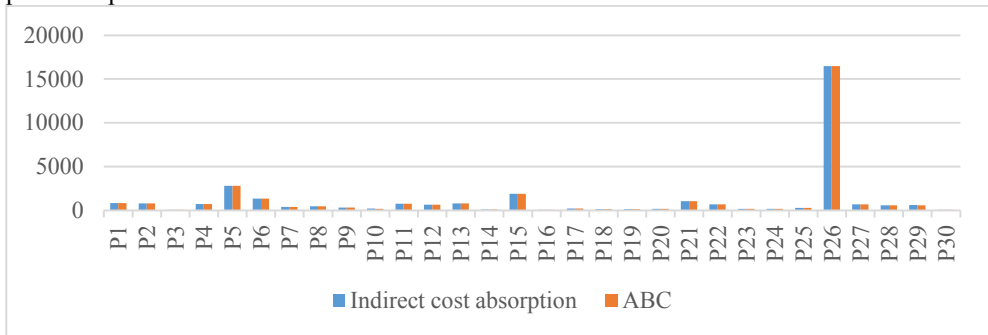

Fig. 2. The difference between the indirect cost absorption method and ABC metho

Table 9. Costs (lei)

Products	Direct cost	Equipment cost	Launch cost	Reception cost	Cost control	Material management cost	Total cost	Unit cost
P1	195655.35	346.02	433.92	17.37	245.26	339.59	196697.92	829.95
P2	189200.44	353.32	443.08	17.37	250.44	346.76	190264.65	786.22
P3	46857.21	3360.92	2107.37	17.37	1191.12	1649.25	53533.99	46.51
P4	358083.96	2220.66	928.27	17.37	524.67	726.47	361774.93	713.56
P5	401047.20	420.48	263.65	17.37	149.02	206.34	401897.72	2790.96
P6	353451.70	773.80	485.19	17.37	274.24	379.71	355002.30	1339.63
P7	164312.40	613.20	768.98	17.37	434.64	601.81	166146.59	395.59
P8	284994.00	932.94	1169.95	17.37	661.28	915.61	287775.54	450.35
P9	190505.07	1865.88	1169.95	17.37	661.28	915.61	194219.55	303.94
P10	100657.62	1629.36	1021.65	17.37	577.45	799.55	103903.45	186.21
P11	168790.10	671.60	421.11	17.37	238.02	329.56	170138.20	739.73
P12	47883.75	219.00	137.32	17.37	77.61	107.47	48335.05	644.47
P13	215622.24	805.92	505.33	17.37	285.62	395.48	217236.48	787.09
P14	39611.52	591.01	673.77	17.37	380.83	527.30	41274.50	112.16
P15	1266491.17	991.34	1243.19	17.37	702.67	972.93	1269445.74	1869.58
P16	78793.00	1766.60	2014.00	17.37	1138.35	1576.17	83729.32	76.12
P17	331641.44	2639.68	3310.28	17.37	1871.03	2590.65	339479.80	187.77
P18	35388.69	908.12	569.41	17.37	321.84	445.63	37205.43	119.63
P19	53439.94	597.14	748.84	17.37	423.26	586.05	55226.55	135.03
P20	53284.80	992.80	622.51	17.37	351.85	487.18	55269.33	162.56
P21	1117305.66	3159.44	1981.04	17.37	1119.72	1550.38	1123583.23	1038.43
P22	3545447.40	15481.84	9707.47	17.37	5486.83	7597.15	3576140.91	674.49
P23	4322066.04	217204.20	54476.80	17.37	30791.22	42634.01	4624555.63	155.43
P24	1099006.36	22107.32	13861.79	17.37	7834.93	10848.36	1142827.77	150.95
P25	245613.99	2572.52	1613.03	17.37	911.71	1262.37	250728.62	284.60
P26	4644148.02	1235.16	516.32	17.37	291.83	404.07	4646208.70	16475.92
P27	380777.10	1664.40	1043.62	17.37	589.87	816.74	384092.36	673.85
P28	542941.49	2117.73	1770.49	17.37	1000.71	1385.60	547847.79	566.54
P29	146213.76	1108.14	463.22	17.37	261.82	362.52	148064.31	585.23
P30	59996.30	3883.60	2435.11	17.37	1376.36	1905.73	67708.74	50.91
Total	20679227.72	293234.14	106906.66	521.10	60425.48	83666.05	21140315.10	

Table 10. Comparative analysis between the obtained results.

Products	Indirect cost absorption method	ABC method	Difference
P1	830.26	829.95	0.31
P2	786.53	786.22	0.31
P3	50.13	46.51	3.62
P4	720.41	713.56	6.85
P5	2794.47	2790.96	3.51
P6	1343.20	1339.63	3.57
P7	395.93	395.59	0.34
P8	450.71	450.35	0.36
P9	307.55	303.94	3.61
P10	189.81	186.21	3.60
P11	743.29	739.73	3.56
P12	647.87	644.47	3.40
P13	790.66	787.09	3.57
P14	112.82	112.16	0.66
P15	1869.94	1869.58	0.36
P16	76.81	76.12	0.69
P17	188.14	187.77	0.37
P18	123.21	119.63	3.58
P19	135.37	135.03	0.34
P20	166.14	162.56	3.58
P21	1042.05	1038.43	3.62
P22	678.12	674.49	3.63
P23	168.81	155.43	13.38
P24	154.58	150.95	3.63
P25	288.21	284.60	3.61
P26	16482.74	16475.92	6.82
P27	677.45	673.85	3.60
P28	568.53	566.54	1.99
P29	592.05	585.23	6.82
P30	54.53	50.91	3.62

5 Conclusions

The results of this study show that the presence of economies of scale in the industry market indicates inefficiency in operations, and unit production costs could be reduced by increasing the scale of operations. As long as unit costs can be reduced by increasing production, this approach would be more effective, leading to greater profitability for the organization.

The strategy is only a viable option if additional production can be sold, which may not be the case in a competitive market, but the company has economies of scale, which can be improved by the measures identified by the analysis, ie a cost allocation that to benefit from increased profitability. With the main purpose of illustrating the application of these theoretical relations and to show the importance of potential errors, this paper presents an empirical study conducted on a company operating in Romania. This research can be continued by expanding the analysis by addressing economies of scale by expanding the field of research.

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