

BULETINUL INSTITUTULUI POLITEHNIC DIN IAȘI
Publicat de
Universitatea Tehnică „Gheorghe Asachi” din Iași
Volumul 67 (71), Numărul 4, 2021
Secția
CONSTRUCȚII DE MAȘINI

COST STRUCTURE FOR A SMALL MECHANICAL COMPANY

BY

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Received: November 28, 2021

Accepted for publication: December 9, 2021

Abstract. This article tries to help the small mechanical companies with a proposed solution of a cost structure.

The decomposition of all the activities that constitute the global cost, can constitute an advantage in front of the competition.

In today's economy, any information on real time regarding the spending of a small company could make the difference between bankruptcy and profitability.

Keywords: production cost; globalization; mechanical part; company framework; manufacturing.

1. Introduction

Globalization is an irreversible phenomenon in the structure of today's society.

The expansion of markets, globally, the establishment of multinational development policies and their implantation in different areas of the globe, by decomposing the different phases of the products had and aim, on the one hand the significant reduction of costs, but on the other hand the structuring competencies depending on the level of organization of local companies.

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For this reason, the decomposition of this delocalized puzzle, by integrating different activities in a global context, stimulates both companies that need to be innovative and introduce methods and solutions that allow the perception of different stimulus, but also the integration of different visions related to highly divergent cultures to work together, ignoring at the same time any cultural, religious or even time zone differences, but also the societies that acquire this approach, through the need to implement policies that resonate with the new paradigms.

In this context, the different phases of the project have the potential to be realized and implemented independently of the other phases, so that only their completion and integration in the general structure of the product makes possible the overall vision related to it.

For this reason, the calculation phase of the production cost is one of the many stages of a product's life.

In this article we will approach only the calculation of the price of a mechanical part that can be structured, through the involvement of the departments that are the framework of the company (Deaconu, 2021).

The existence or lack of certain departments in the company does not constitute a competitive advantage over others that have achieved this structure, by the simple fact that their lack of involvement is transferred to others.

Therefore, the final cost pressure remains the same.

2. Cost Structure Study

Manny studies are done in this direction. We will approach here few that were taking into account for this study.

In (Devi and Devi, 2017) is presented a study that analyzes the production cost calculation by comparing the manufacturing cost with production cost.

Windmark, in (Windmark and Andersson, 2018), presents a estimation methodology for a cost model employed for industry. Unfortunately, in this article, there aren't any costs taken into account regarding some of the personnel.

Putri in (Putri, 2017), proposed a research to be able to determine the basic price of production, calculation of business profit and the factory cost of a tofu factory.

The research (Roy *et al.*, 2011), present a detailed model that are doing an estimated manufacturing cost for the automotive industry.

Silva Medeiros in (Silva Medeiros *et al.*, 2017) are presenting a cost method used in lean manufacturing companies by understanding the difference between the applied model and a costing method.

3. Proposed Cost Structure for a Small Mechanical Company

In the following chapter we will propose a cost structure for mechanical part, which can be used in their quotations by small companies.

It is possible to assess the amount of cumulative charges at each stage of the business cycle or the production process of parts and services and their distribution either like:

- production cost,
- other costs,
- sale cost
- financial cost

The Production Cost (PC) represents for industrial companies the transformation of raw materials into intermediate or into finished products.

These costs are usually integrating components or elements used in the manufacture of products.

Cost calculations can be performed for products in production, intermediate state of products or finished products, ... but also for specific orders, series production, ...

Production cost assessments are increasingly carried out for service activities of the tertiary sector (banks, insurance, transporters, etc.)

The Production Cost (PC) can be structured by the types of charges that are involved in the production cost structure:

- direct cost,
- indirect cost,

The Direct Cost (PCDC) is the charges that are directly linked to an activity or to a product of the company. The calculation of these charges is simple. These can be directly integrated into the cost calculation.

The Indirect Cost (PCIC) is the charges that aren't relate directly to an activity or to a product of the company. The calculation of these charges is not so simple like those of the direct cost. These are only included in the cost calculation after calculations to define the part of these charges relating to the activity or product in question.

The raw materials cost (RMC), refers to the cost of the components that go into the technology of a final product.

Raw materials cost can be decomposed into:

- direct cost,
- indirect cost,

We should take into account for the direct cost of raw material cost:

- material cost,
- procurement cost,
- direct labor cost involved in the purchasing,
- manipulation cost,

Materials Cost (RMMC) include products that require additional operation (such as metal parts, plastic parts, ...) as well as finished products used in the form received (such as fasteners, packing elements, cleaning, ...). Sourcing and purchasing raw materials at a lower cost can be a competitive advantage at the moment, but you need to have an over view of the project to create sustainability for the company, but also for these suppliers.

Procurement Cost (RMPC) represents the process of buying different services, activities and commissioning's that are necessary for the company.

Direct labor cost involved in the purchasing (RMDLCP), includes all expenses (salaries, employers' charges, etc.) relating to personnel working in the purchasing function and only in it. This is calculated like an average for an hour.

Logistic cost (RMManipulationC) includes all expenses (salaries, employers' charges, etc.) relating to personnel working in the reception, control and manipulation of the raw material function and only in it. This is calculated like an average for an hour.

If we are taking into account the indirect cost of raw material, we should manage the following tasks:

- stock cost,
- exchange rate difference,

Each raw material bought, will be recorded in the company's log and will be stocked until it will be used for production.

The Stock Cost (RMSC) can be defined like a set of expenses due to the presence of the raw material in the stocking area. Planning the production and brief meeting with the purchasing department, allow to reduce the stocking cost and save enough money for the company.

The Stock Cost, will include: the rent for the space that is concerned, the energy used to heat, cool, guard, illuminate, etc., and to do the maintenance.

The last cost of the Raw Material Cost is the Exchange Rate Difference (ERD).

In today's commercial structure, in order to obtain a competitive price for raw materials, it must often be bought from emerging markets. All this involves costs generated by these acquisitions and should take into account.

In the production direct cost, are also included the Commercial Part Procurement Cost (CPPC) with:

- direct cost,
- indirect cost,

If we are referring to the direct cost of Commercial Part Procurement Cost (CPPC), we should take into account the same structure like for the raw material cost with the specification that all the commercial part are available by a catalogue.

Direct Labor Cost involved in Production (DLCP) is main asset of a company and it is calculated like an average/hour.

This indicator represents the part of the cost of the product on which the company can improve its efficiency.

Unfortunately, from a development point of view, in some developing countries industry cannot afford payroll taxes.

While this appears to be an advantage for the industry, cheap labor does not automatically mean competitive advantage. We won't go on further details, but the current global trend is towards lower payroll taxes (both employee and employer share) as a means at the same time of increasing salaries and reducing costs labor on the same time.

Direct Labor Cost involved in Manufacturing Preparation (DLCMP) concerns all the activities preparing the DLCP.

Concerning the Indirect Production Cost, are expenses that allow the company to operate as a whole, but which are not related to the manufacturing of the products made in the company.

There is the following decomposition for the Indirect Cost:

- licenses,
- stock cost,

The electricity costs, the rental costs and maintenance cost for the company where the products are produced and is considered as indirect costs.

If we are taking into account that in the developed countries, much of the production equipment is computer guided systems, we can understand the need for such outgoings.

If we go back to the root of the cost structure, then we see that other references that are part of Other Costs (OC):

- Account Department,
- Insurances,
- Administrative,

The Account Department has the main task to ensure the accounting of financial flows, to produce the required accounting documents and to assure the relations with banks and tax services. This is cost/hour.

In order to warrant the smooth running of the activities, the companies must assure the goods and the production corresponding to at least a turnover similar to the previous year. This implies the existence of additional costs that must be included in the realized production. This is cost/hour.

The Administrative cost is a support activity. This is cost/hour.

Sale Cost (SC) is the costs associated with the distribution, marketing and sale of a product or service. The structure is composed by:

- direct cost,
- indirect cost,

The sale direct cost concerns Direct Labor involved in Sale and is average/hour.

The sales indirect cost concerns the electricity costs, the rental costs and maintenance cost for the company where the products are produced and is considered as indirect costs. This is cost/hour.

The last cost that should be taken into account is the Financial Cost (FC).

To be able to sustain the all process of manufacturing, there is a certain amount of cash flow that is requested to be available in the company to sustain it. Even if the cash flow is from a credit line, banking loan or the company capital, this cash flow, has a cost.

In the Table 1 is presented the proposed cost structure.

Table 1
Cost Structure

<i>Production Cost (PC)</i>	<i>Direct Cost</i>	<i>Raw Material Cost</i>	<i>Direct Cost</i>	<i>Material Cost</i>	
				<i>Procurement Cost</i>	
				<i>Direct Labor Cost involved in Procurement</i>	
				<i>Logistic cost</i>	<i>Reception</i>
					<i>Control</i>
			<i>Manipulation</i>		
			<i>Indirect Cost</i>	<i>Stock Cost</i>	<i>Rent</i>
					<i>Energy</i>
					<i>Maintenance</i>
				<i>Exchange Rate Difference</i>	
	<i>Commercial Part Procurement Cost</i>	<i>Direct Cost</i>	<i>Procurement Cost</i>		
			<i>Cost with Procurement</i>		
			<i>Direct Labor Cost involved in Commercial Part Procurement</i>		
			<i>Manipulation</i>	<i>Reception</i>	
				<i>Control</i>	
		<i>Manipulation</i>			
		<i>Indirect Cost</i>	<i>Stock Cost</i>	<i>Rent</i>	
				<i>Energy</i>	
				<i>Maintenance</i>	
			<i>Exchange Rate Difference</i>		
<i>Direct Labor Cost involved in Production</i>					

		<i>Direct Labor Cost involved in Manufacturing Preparation</i>	
	<i>Indirect Cost</i>	<i>Licenses</i>	
		<i>Stock Cost</i>	<i>Rent</i>
			<i>Energy</i>
			<i>Maintenance</i>
<i>Other Costs (OC)</i>	<i>Account Department</i>		
	<i>Insurance</i>		
	<i>Administrative</i>		
<i>Sales Cost (SC)</i>	<i>Direct Cost</i>	<i>Direct Labor involved in Sale</i>	
	<i>Indirect Cost</i>	<i>Stock Cost</i>	<i>Rent</i>
			<i>Energy</i>
			<i>Maintenance</i>
<i>Financial Cost (FC)</i>			

3. Conclusions

The product cost can be for a specific phase of the product structure or for its integrality, depending on whether was taking into account for fulfilling this cost.

It can include all the general expenses or not, leaving to the company, decision on what to be used into calculations.

There are several costs corresponding to the different stages of the manufacturing process or to the operating cycle of a company (purchase, production, sale, etc.): the acquisition cost, the production cost, the distribution cost, that is employed to have a right cost for the product involved.

The product cost is a tool for decision making and improving the profitability of the business.

The importance of the global cost is that it becomes a quote and serves as a contact between the supplier and the customer.

Such an approach establishes, in addition to the contractual relationship between the supplier and the customer, the price, the delivery date, but also the quality offered for the overall cost.

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**STRUCTURA COSTURILOR PENTRU O FIRMĂ
MECANICĂ MICĂ**

(Rezumat)

Acest articol încearcă să ajute micile companii mecanice propunând o soluție a unei structuri de costuri.

Descompunerea tuturor activităților care constituie costul global, poate constitui un avantaj în fața concurenței.

În economia actuală, orice informație în timp real cu privire la cheltuielile unei companii mici ar putea face diferența între faliment și profitabilitate.