JOB COST CALCULATION IN A SITUATION OF DECREASING MARKET DEMAND AND ITS IMPACT ON ECONOMIC VALUE GENERATED BY THE SUPPLY CHAIN

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Abstract

This article will try to define which type of cost calculation will help generating the highest economic value by the supply chain in a situation in which a steel-making company is facing a decrease of market demand. In such a situation, production and sales of the company are decreasing in time. This leads to an increase in fixed cost assigned to products. In a standard situation, the company will try to increase the selling price of such products to cover the fixed cost increase but in our situation the market will not allow it. Some products can now generate negative profitability and the company may decide to stop selling them for the price that the market allows, because it seems that they are generating loss. This will lead to further decrease of production and again, an increase of fixed cost for products. This spiral makes the situation worse and worse. To avoid such a development, the company must change its approach to job cost calculation. Methodology must be changed in a way which will support accepting all jobs that will help cover the fixed cost in the maximum possible amount. This approach will ensure that the supply chain will generate in this complicated situation the highest possible economic value. This is one of the necessary measures that can make the company one of the final market survivors.

Keywords: Supply chain; cost calculation

1. INTRODUCTION

One of the objectives of business activity is achieving profit. To maximize the profit and economic value generated by its supply chain, a production plant needs to know the profitability of its products. On the basis of this information, different commercial, production and logistic strategies are employed for individual products. The goal is to focus on production and sale of the most profitable products. To determine profitability, it is necessary to know the selling price on one side and production costs on the other side. Cost calculation then consists of two main parts, variable costs, which depend on the volume of production, and fixed costs, whose volume remains unchanged when the volume of production changes, or changes in steps when certain levels of production growth are reached. The other group is logistic costs incurred from a specific job. [1]

2. EVALUATION OF PROFITABILITY OF JOBS USING CALCULATIONS

Plan calculations for pricing - their objective is to provide a basis for establishing of an optimal selling price of products, which will generate the required level of profit. These calculations are done for individual types of products and subsequently compared to their regular selling price on the market. On the basis of this comparison, the appropriate marketing strategy is determined, alternatively, the established selling price is adjusted to a level that the customer accepts.

Job calculations - these are calculated for specific jobs with the goal of determining their profitability. They are based on plan calculations of products for pricing and they add logistic costs incurred directly from the job. Based on them, the commercial department decides on the acceptance or rejection of the job.

When calculating plan calculations of products, a company normally bases them on their production plan. Calculation of unit costs is based on appraisal of consumption in the bill of materials of the individual products according to their plan prices. On the basis of the planned volume of production the total variable costs of individual products and the total fixed costs of the production plant are defined and then these are allocated to individual products. The result is plan calculations of costs of individual products per unit of production. In the case of plan calculations for pricing, the target selling price is established by adding the desired profit figure, alternatively, the selling price is set by the market and the levels of cost or profit are established. In the case of job calculations, the planned costs of a product are increased by the logistic costs of a specific job. Total costs calculated this way are then compared to the selling price of this job [2].

3. ECONOMIC IMPACTS OF DECREASE OF DEMAND

Decrease of demand for a single product

In a situation when demand for a single product starts to decrease, its price starts to drop as well as a result of the market mechanism. Such product will start to exhibit lower margin of profit and the company will start prioritizing production of other products. In the ideal case, the company will manage to compensate for the lower volume of production of the problematic product by selling other products and the calculated fixed costs remain unchanged. In this case, the above stated calculations work correctly and help the company focus on profitable production and maximize the value generated by the supply chain.

Decrease of overall demand for multiple products of the company

A more severe situation arises when the company has to face decreasing demand across its entire product range. In such situation, it is not possible to compensate for the decrease of the selling prices and volume of sale by increasing the sale of other products from the portfolio. The amount of the produced and sold products then decreases absolutely and consequentially leads to an increase of unit fixed costs.

If the company uses total fixed costs established, for example, on the basis of an annual plan, for plan calculations of its products, the calculated profitability of products will decrease in the short term only on the basis of decrease of the selling price. In the moment when an update (decrease) of the sold volume in plan calculations occurs, the calculated the unit fixed costs increase. Here, the company can react to a bad market situation by reducing its fixed costs across the entire supply chain, but the principle of fixed costs does not allow them to be reduced evenly with decreasing production. This is when products start becoming less profitable not only because of the decreasing selling price but also because of increasing unit fixed costs.[3]

If the company does not adjust the decision-making process of accepting jobs in this situation, the ones that become less profitable or unprofitable because of increasing the unit fixed costs may start getting rejected. However, the company is not capable of compensating for this decrease of sale by selling other products, because the demand is decreasing for the entire product range. As a result, this situation leads to further increase of unit fixed costs. It is then apparent, that if the company does not react and change its methodology of establishing job and pricing calculations, it will get stuck in a spiral which, because of decreasing economic value generated by the supply chain, eventually brings the company to a loss-making, its available funds will decrease and if the situation on the market does not improve quickly, this can all lead even to the extinction of the company.

4. JOB CALCULATIONS IN A SITUATION OF DECREASING MARKET DEMAND

There are two types of decrease of market demand, permanent and temporary. In the case of permanent decrease, the company assumes that there will no longer be any increase of demand in the future. In such situation, the only option is to find products that customers demand, make the necessary investments to adjust the supply chain and adjust the production portfolio [4]. When the company assumes the decrease is only temporary, it is necessary to adopt such measures that, until demand is renewed, the company minimizes its losses and thus the outflow of available funds. This relates mainly to reducing overall costs across the supply chain and variabilization of the fixed costs. However, it is advisable also to adjust the process of assessment of individual jobs and the methodology of calculation of job and plan calculations for pricing decisions.

4.1 Contribution margin and profit as a criterion for accepting jobs

When an unprofitable job cannot be compensated for with a more profitable one, it is advisable to change the assessment criterion for assessment of individual jobs. An appropriate indicator in this situation is the contribution margin and profit. It tells us what amount the job will contribute to help covering the existing fixed costs of the supply chain or profit after it covers the variable costs incurred from its production. Even after variabilization of fixed costs a certain part of them will remain constant irrespective of the production. Accepting jobs with a positive contribution margin has a positive effect on the financial results [3].

4.2 Plan calculations for pricing at the level of standard fixed costs

Another way to react to an overall decrease of sale and production as a result of decrease of demand is to use standard fixed costs per unit of production. These are based on the assumption that calculations should include such fixed costs that reflect standard use of the production capacities in the sector under consideration. On the basis of available information about utilization of production capacities of the competitors and after factoring in the market situation in the sector under consideration, the company establishes the standard level of utilization of production capacity and allocates its fixed costs to this level of production. The unused production capacities then no longer affect the increase of the unit fixed costs and thus the decrease of profitability of individual jobs in job calculations.

On the basis of calculations with standard unit fixed costs, even in a situation of temporary decrease of demand, the company can keep using job calculations as a means for rejection of such jobs that would, even in a situation of normal (standard) level of production, be unprofitable. If this approach were used by all competitors on the market, it would lead to an increase in the selling price of the products, whose price does not correspond with the standard production costs, because no manufacturer would be willing to produce them for the low selling price.

5. EXAMPLE OF TYPICAL BEHAVIOR OF COMPANIES IN A SITUATION OF DECREASING MARKET DEMAND

In practice, companies react to decreasing market demand gradually. Examples of behavior of companies given below are based on the situation on the market of pipe manufacturers for the oil industry following the outbreak of the oil crisis:

- **Identification of the problem situation**
  Following the outbreak of the oil crisis, a significant decrease of new projects for oil wells and oil pipelines occurred. For this reason, the demand for pipes for oil wells and pipelines decreased dramatically, which led to a decrease of the selling price of these products. In the first step, companies started to reject these jobs because they generated loss in job calculations. Companies tried to focus on a different product range. However, it did not fully compensate for the decrease of demand for oil pipes, and this led to a decrease of utilization of the production capacity and to an increase of the unit fixed costs across their entire product range. The majority of companies reported losses and this created pressure to reduce fixed costs across the logistic process. However, even all the adopted cost saving measures did not cover the decrease of production and the companies still remained unprofitable.
- **An attempt to minimize outflow of financial resources**
  In this situation managers of the companies realized, that every job which has a positive contribution will contribute to covering of fixed costs and thus reduce the outflow of available funds. What is limiting here

is a situation when, because of unprofitable jobs, the fixed costs would have to be increased significantly, i.e. for example increase of shift working by hiring new workers. The decision then was to stabilize production at a certain level and prioritize jobs that are still profitable and fill the remaining available capacity with unprofitable jobs that generate contribution margins as high as possible. In this situation, the supply exceeds the demand and the selling prices reach a level which, in a normal situation, none of the manufacturers would accept and the supply chain becomes ineffective in the long term. However, in a situation where the companies are fighting for survival, they have to accept even these low selling prices.[3]

- **Identification of standard fixed costs**
  When the situation on the market slowly starts improving, what occurs first is an increase of demand. The company sees an opportunity to increase shift working and utilization of its production capacity. However, if the company management does not identify the essence of the market situation in time, the company can still accept jobs generating only the contribution margin and, to cover for the increased demand, it will hire new workers and increase shift working. However, very soon it will find that increasing utilization of production capacity and the increased volume of production do not yield the expected profit, because the prices of jobs are still at a low critical level. At this moment, it is advisable to start using calculations with standard the unit fixed costs as the criterion for accepting jobs and to only accept those jobs that would yield profit in the standard market situation. By rejecting unprofitable jobs, their selling price will increase and they will gradually start returning to their normal level.[5]
- **Stabilization of the market**
  As soon as an increase of the selling prices occurs and demand returns to the standard level, companies will start generating a standard level of profit and their utilization of the production capacities will return to the standard levels. To maximize the value generated by the supply chain, it is advisable that the company again starts using plan calculations with the unit fixed costs based on the level of utilization of the production capacities corresponding to the standard level of demand as the criterion for making decisions on accepting jobs.

6. CONCLUSION

From the above we can conclude that for the company to maximize the economic value generated by the supply chain, it is necessary to change the criterion for making decisions on accepting jobs according to the current situation on the market. In the case of stabilized market, it is advisable to use calculations with distribution of fixed costs, which are based on the level of utilization of production capacities at the level of the company plan. In a situation of temporary dramatic decrease of the market demand, it is advisable, along with optimization of costs of the logistic process, to use for assessment of acceptance of jobs the contribution margin and profit.[6] Thanks to this, the company will achieve the best possible economic result and minimize outflow of available funds. Once the situation on the market starts improving, it is advisable to use calculations at the level of standard unit fixed costs, which will create natural pressure on growth of selling prices of products, whose prices dropped below the level, where their production is profitable. As soon as the market situation stabilizes, it is advisable to start using calculations with the level of the unit fixed costs corresponding to the company plan again. Changes of methodology of establishing plan calculations for pricing according to the current situation on the market thus allow the company to be making the product range that maximizes the economic value generated by the supply chain at all times.

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