

EFFICIENT COST SAVINGS IN THE PROCUREMENT PROCEDURES OF INDUSTRIAL ENTERPRISES

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Abstract Cost saving is one of the most important factors for sustainability of the industrial enterprise. The company must optimize its procurement process, monitor and forecast of market prices, search and introduce alternative, select future partners carefully and apply optimal procedures. Also the buyer has to distribute the orders among suppliers, motivate them in cooperation and promote competition between suppliers. It is important to evaluate the transaction costs for buyer and participants before announcement of the tender, compare them with the parameters of the transaction and the market situation. The article shows growing costs in case of superposition of procurement cycles, and notes that the switch is characterized not only by cost but also time figures. It is concluded that the minimization of switching time leads to cost saving.

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1. INTRODUCTION

The availability of industrial enterprise competitive advantages relative to other market players is largely determined by its ability to manage costs. The purchasing process has a significant impact on the cost of the finished product. According to the Journal of Applied Business Research on purchasing transactions accounted for up to 55% of the annual revenue (Cheraghi, Dadashzadeh & Subramanian, 2004). The international consulting firm KPMG generates data that the share of purchasing in different manufacturing industries ranging from 26 to 65 per cent of the earnings of companies (KPMG, 2011).

Based on the information of another magazine *The McKinsey Quarterly*, purchasing goods and services ranging from 50 to 80 per cent of the total cost (Chapman, Dempsey, Ramsdel & Reopel, 1997). Efficiency of cost saving largely depends on how the work with suppliers is organized. Modern understanding of the purchasing process presumes building between suppliers and consumers of the system of relations based on a balance of interests of the parties and aimed at long-term cooperation of the parties.

2. BASIC APPROACHES TO PURCHASING

Purchasing is as the acquisition of resources from third-party contractors within defined procedures. These procedures are based on the typology of purchasing from the position of the pricing outlined, in particular, the famous American scientist F. Webster (Webster, 2005, pp. 47-48).

The first approach is purchases based on costs, which are mainly used for the development and acquisition of new equipment, design and construction, it assumes the existence of a close working relationship between the parties. The distinctive feature of it is that the seller pays the actual time and material costs and overheads plus some compensation under the terms of the contract. The client is able to control the counterparty by checking the corresponding records.

The second approach is market purchases, defined as repeated, the acquisition of such goods, the functional requirements that allow you to simultaneously work with various vendors. This allows customer to develop between the suppliers of competition within the range of market prices for the products. Adjustment is carried out by changing the ratio in which the purchase of a specific resource is allocated among the sellers. A key objective of this strategy is to find new counterparties supporting price pressures within the array of suppliers.

The last of the described approaches is the competitive bidding, which is also referred to as *regulated procurement*. This form allows seller to develop special requirements and to the product purchased, and a potential supplier, as well as to the results of its work on the performance of the contract. Potential participants are

invited to a description of the desired product, as well as the main parameters of the future deal (amount, date and place of delivery, payment terms, etc.), under which they should prepare their offer (bid), which would normally be conducted on a confidential basis (in a sealed envelope).

It is clear that purchases based on costs, if their use for the supply of industrial resources, imply the existence of a close partnership between consumer and supplier. This implies a deep level of integration, nonmarket administration process; so in this case, the purchase must be from a single source. Thus, the procurement procedures to ensure the production of becoming bureaucratic and look like internal documents circulation.

According to the author's opinion, the approach to purchasing process based on the principle of *cost plus* is not optimal. This is due to the fact that this pricing model is heavily dependent on subjective factors, in addition to artificially increase the economic efficiency of suppliers, diminishes the motivation of management (and staff) of these firms to improve the quality of the work.

In addition, we should note that the interest of supplier to deal depends on the settings of this transaction, particularly, the amount and proportion of transactions in the overall sales portfolio. It is clear that the existence of contractual relations requires certain supplier servicing costs. Supplier when reaching certain levels is not interested in increasing the cost of servicing the transaction (quality, service, etc.) because it does not lead to a proportional increase its benefits, i.e. is not effective. Thus, satiation is coming, which corresponds to the Pareto principle and can be represented graphically (Fig. 1).

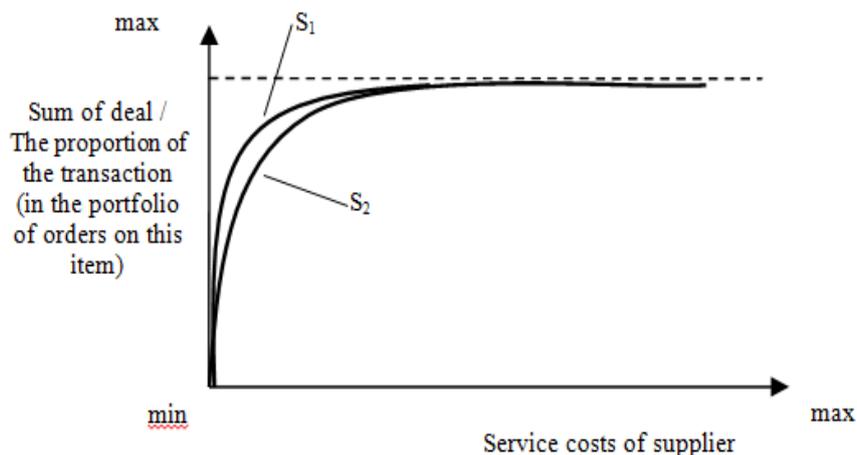


Fig. 1 The behavior of the supplier – *saturation curve* (Pleschenko, 2011a, p. 153)

Proceeding from this, it is the better to divide the amount of long-term contracts between several suppliers (in this case between the suppliers of S_1 and S_2), avoiding the monopolization, because in this case, suppliers will see the prospect of increasing (or decreasing), that would be an incentive for them.

In some industries if the company has several independent suppliers with whom it maintains partnerships it would lead to greater flexibility, and allows company to satisfy more customers' wishes. For example, development and manufacture of helicopters are separated from the production of the engines. This approach enables each helicopter have alternative power units, and also gives the opportunity to bargain with suppliers on price and parameters of engines. In particular holding *Helicopters of Russia* is buying engines not only on domestic market but also using production of well-known companies such as Pratt & Whitney, Rolls Royce and Turbomeca (Business Guide-Aircraft Industry, 2011).

Market purchases involve mutual interaction of the buyer with multiple suppliers, arising out of the procedural matters are largely a task of the organization and conducting negotiations on different hierarchical levels.

With regard to the procurement, we could say that this type of purchases is developing dynamically, covering a growing number of companies. The principles of procurement have spread from the area of public (government) purchases in the corporate sphere. These norms largely defining the strategy and tactics of market communication of the buyer are the following: openness and transparency of procurement procedures, accountability and responsibility in their conduct, competitiveness, equality and justice for all participants (Kuznetsov, 2005).

3. TO THE QUESTION OF THE NUMBER OF SUPPLIERS

It is known that the total number of suppliers of industrial enterprise ranges depending on the situation in economy, changes in product range, occurring in the market M&A processes. In general, it should be noted that in the modern world there is a trend to reduce the overall number of suppliers (especially for large corporations). This tactic applies to savings since fewer suppliers means large quantities of orders per on average one counterparty that stimulates their lower prices, and, moreover, this approach reduces transaction costs (Chapman, Dempsey, Ramsdel & Reopel, 1997). Is that the potential benefit from lower prices through the use of multiple channels of supply are often less than the total transaction costs of servicing these relations.

F. Webster notes that in the context of the implementation of the industry such as delivery of manufacturing resources based on the principle of *just in time* and accelerated processing of orders increasing in the world gets sole source procurement practices (Webster, 2005, p. 37). Again, this is understandable, since the alternative selection procedures (tender, etc.), and the subsequent registration of

the order and signing the contract require a considerable amount of time, as well as increases the transaction costs of the parties. In addition, the separation of the orders for several lots among competing suppliers to the supplies on the model of *just in time* will lead to a substantial increase at least through the cost of logistics.

Furthermore, the role of competition in the markets to let producers look for unique solutions to ensure unambiguous identification of a product, as products, connected only with this company. Of course, that in modern conditions the separation and specialization of production activities; you need to have strong partnerships with suppliers of resources. To a certain extent, this policy provides the enterprise a competitive advantage, while imposing on him certain restrictions and obligations. In particular, the ability to control the pricing from the supplier, the complicated process of supply planning and management, respectively, with variations in demand for finished products likely failures (deficit) or on the contrary, the increase in value of stocks and the costs of storage. It should also be borne in mind if it turns out that for some reason the production resource is no longer needed, the existing stocks can go in the category of non-liquid realization, since they will not demand other market players.

This apparent stability carries and a potential threat, since nobody can guarantee that the acceptable delivery conditions will be kept by supplier provider infinitely. In addition, it cannot be excluded and other risks, such as a possible accident, strikes and other force majeure circumstances that may affect the potential for monopoly to supply in accordance with previously agreed conditions.

Additional evidence of the vulnerability of the single supplier model has recent events resulting from the devastating earthquake in Japan in March. Most disruptions of supply components felt manufacturers of automobiles and electronics. For example, Sony Ericsson reported a deficit of two serial models of smart phones and postponed the beginning of sales of the new phone. Nokia signalled a possible shortage in the market phones (supporting two SIM-cards), Ford reported a forced change of provider enamels for colour branding of several car models, and Chrysler had limited colour range of cars 10 colours (Kommersant, 2011). Losses, according to expert's opinion published on 10.05.2011 in the Russian business newspaper *Kommersant* push producers to diversify suppliers in order to disperse the risks for different regions (Kommersant, 2011).

These facts confirm the importance of the research on the implementation of purchases on alternative base and improving their effectiveness.

4. OPTIMIZATION OF TRANSACTION COSTS ON THE STAGE OF SELECTION OF SUPPLIER

The availability of alternative sources presumes that for the buyer has to schedule this process to distribute the volume of orders among suppliers, motivate them

in cooperation, as well as to promote competition in the framework of their traditional counterparts. Turning to the question of communications, information interaction with suppliers it should be added that an important role in the implementation of the procurement process could play such a mechanism as a periodic assessment and reassessment of partners, and the audit of them.

Information obtained in the course of these activities is a kind of feedback from the customer. And if the suppliers are interested in further cooperation, they can make an extra effort to get the order or the proper performance of the transaction. This may be the discount from offered price, free of charge delivery of samples for tests, shortening delivery. Also there are such things as how to change settings or the capacity of their enterprises toward better conformity with the requirements of the customer, for example, the increase of the statutory fund or the passage of certification procedures according to the quality management system, etc. Moreover the negative motivation of suppliers is also possible for example by the periodical publication of *black list* of unreliable and unfair contractors.

In addition, important is the opposite process – flow of feedback to the purchaser from the sellers. Communications with suppliers are possible through different methods, in particular, periodic surveys or seminars/conferences of suppliers. For example, in May 2010, Russian major auto manufacturer AVTOVAZ held a special conference of its important suppliers, attended by 300 representatives of existing and potential business partners. During this event the strategy of the company until the year 2020 was described to the suppliers as well as the requirements of the enterprise to its partners.

In general, the effectiveness of the implementation of competitive procedures depends on the combination of the following factors:

- exchange of information between people involved in the process;
- level of competition on the market of purchasing goods;
- the influence of subjective(human) factors in decision-making;
- rationality of purchasing procedures;
- systematization of an array of suppliers.

Within the framework of the procedures for selecting suppliers and negotiating process wishes expressed by the parties in the transaction options and conditions for cooperation are often diametrically opposed. It is clear that the consent of one party with any requirement means for additional risks in the future, that increases the transaction costs of the counterparty and the price of the goods, and sometimes leads to renunciation of participation in the procedure or contract.

In confirmation of what we show on the abscissa axis value of the transaction, and ordinate – costs, losses, costs, and risks (Fig. 2), which would be paid by the supplier upon fulfilment of the contract and on the stage of selection. These costs are the result of a combination of requirements (and the degree of formalization of procedures), put by organizer in the conditions of the selection (tendering). It was logical that consumer designed to protect their interests. At the same time, low amount of the potential contract means for supplier that he will not pay high cost

for the participation in this procedure that he is not ready to take some risks and disclose information about his company.

Proceed from the assumption that the function is linear, with the conditional directs S (supplier) and C (consumer) shall mean the preferred scenario for the supplier and consumer. Dependence in general terms describes the equation

$$Y = kX + b, \quad (1)$$

where

Y – the value of the transaction costs,

X – amount of the transaction,

k – the angular coefficient (depends on the complexity of the criteria and allows you to assess what percentage of the estimated transaction amount increase price),

b – fee for access to information about the procedure.



Fig. 2 The preferred scenarios on selection phase (Pleschenko, 2011 a, p. 156)

Thus, optimizing settings selection procedures, configuring them according to market a particular resource, and other factors, the buyer may exercise a balanced management of an array of suppliers.

It should be noted that while competitive purchases the company gradually accumulates an array of suppliers for certain types of items that are traditional parties. This model of co-operation is based on the following assumption: the consumer gives access to a group of suppliers to channel sales, but insists on their compliance with the rules of the game. The party claims a buyer (i.e. loyalty to the consumer) means agreeing to bear certain costs and risks. We can say that the *price of loyalty*, which in the limit will be paid by consumer.

The price of any product is the sum of the cost and profit of the entrepreneur. Taking part in the selection procedure, the supplier would incur some costs, respectively, the price of loyalty in the limit case, equals the total transaction costs of

the seller and is a function of the complexity of the conditions of the event. Ideally, the seller, of course, includes these costs in the price of the product. However, when the market is a competitive environment, there is opposition to the agreement between the players, and then it is likely that these costs, in varying degrees will be considered a party to your account, depending on what percentage of the lower cost of sales is ready to go the supplier with the specified transaction options. Furthermore, in the case of long-term cooperation of the parties, when the risks and costs of the seller are considerably smaller than the original, logical, in our view, the query looks more preferred for the client commercial terms (Fig. 3).

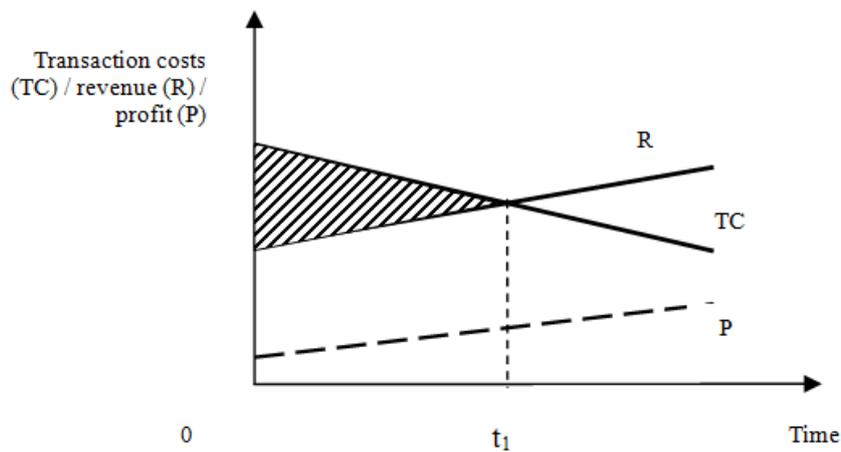


Fig. 3 Revenues, costs and profit provider (Pleschenko, 2011a, p. 157)

It is clear that at the initial stage of relations (hatched area) costs of the supplier and his concerns are sufficiently high. With significant formalization of process by the purchaser, the use of measures to ensure the performance of the contract as the bank guarantee, the total size of the costs and risks of vendor can exceed the amount of its revenue, since the buyer may return the product or to refuse further deliveries. These risks, insurance or other measures to protect the interests of the buyer take costs and reduce the expected profit of supplier.

However, since some time points t_1 , as parameters of the transaction, resolve issues and establish mutual trust between the parties, the size of the total cost and the risk ceases to be critical for the supplier, so the becomes a reasonable question concerning the discount. The size of it is comparable to transaction costs that are no longer applicable to the provider and can be estimated by calculation.

5. INTRODUCTION OF ALTERNATIVE RESOURCES FOR INDUSTRIAL ENTERPRISES

It should be borne in mind that the alternative selection of suppliers may initially increase the costs and risks not only to suppliers, but also the consumer. In fact, especially production and procurement of industrial enterprises are such that the result of reorganization of business processes, the introduction of alternative suppliers will not come soon, and the total cost of the process may increase. Purchasing is cyclical and multi-stage process. So, first is the definition of needs and its formalization, then the selection of suppliers is carried out. After that we get of the counterparty and the terms of the contract. The next step is to implement the concluded agreement, delivery and acceptance of goods. Usually the phases are carried out consecutively, however, with the intention to change the order of purchase, to replace the existing supplier or split the order requires different phases of the process, such as the selection of suppliers ran parallel to each other.

Another important feature of the processes in industry is such factors as switching price. Switching cost includes the costs for the acquisition of additional equipment, technical assistance in the restructuring of production, the cost of retraining of staff, time and cost to validate the quality and reliability of the product-substitute, as well as moral losses resulting from the severance of relations with the old supplier and establishes relations with the new one (Denisova & Ulyakhin, 2006). It is clear that the performance of a contract with an alternative supplier will require the additional cost, so the value of the cost of switching influence largely on the attractiveness of the substitute good for the consumer.

At the same time, according to the author, for industrial enterprises along with the cost aspect of switch must be taken into account the switching time.

Consider the possible situation on Fig. 4 (Pleschenko, 2011b). Put on the abscissa axis time (t), and ordinate – buyer's transaction costs (C), including direct payments the counterparty for sourced material, as well as the cost of customer service transaction. Let's say that S_1 is traditional supplier and S_2 – alternate supplier, the terms of the deal with him which is potentially more profitable. At some point in time t_1 enterprise starts an active work on resource replacement, delivered a traditional supplier, to an alternative product. In this connection, the costs for servicing the transactions increases, because the company had to bear the costs of testing, reset the hardware purchasing additional nodes and aggregates, train personnel. But for the current needs of the production is material either a traditional supplier S_1 . Increased total expenses incurred by the consumer in the interval between the points t_1 and t_2 can be described by the curve S_3 . At point t_2 enterprise ceases to purchase goods from the traditional supplier, therefore expenses are reduced and gradually rise to the level of functions of S_2 . It means that we have started mass production using new material.

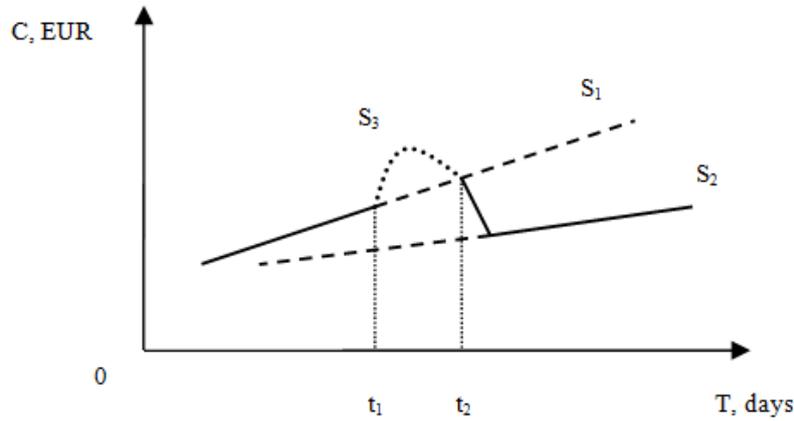


Fig. 4 Buyer's charges connecting with the introduction of alternative production resource (Pleschenko, 2011b)

In this case, we are seeing at the performance of a contract with the supplier and the selection of an alternate of the counterparty. We concluded that the total costs are increased; therefore, the purchasing department should conduct a preliminary study of the experience and qualifications of the prospective counterparty that these costs were justified. Due to the fact that the change of supplier occurs after switching time $T_s = \Delta t$ we have a loss of efficiency because of financial costs at the same level or more in that period.

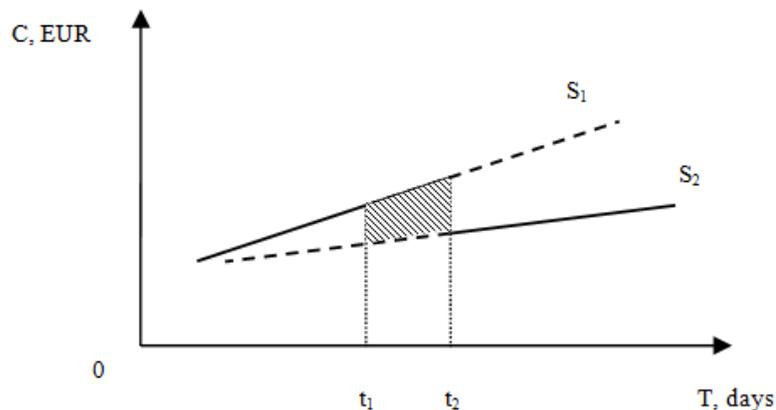


Fig. 5 Estimation of losses from delays decision on purchase of the alternative supplier (Pleschenko, 2011a, p. 159)

According to Fig. 5 get that amount of loss for a period determined by the area of the zone by the functions of the S_1 and S_2 and vertical asymptotes t_1 and t_2 . Accordingly, the value of the expected loss of economic benefits (cost savings) can be defined as the difference of certain integrals of two of the above functions (Pleschenko, 2011b).

$$C = \int_{t_1}^{t_2} S_1(t)dt - \int_{t_1}^{t_2} S_2(t)dt \quad (2)$$

It is clear that for efficiency and minimization the financial losses, it is desirable that the value of $T_n \rightarrow \min$.

6. REGULATION OF SWITCHING TIME

It must be borne in mind that the majority of modern industrial enterprises is the players on the B2B sector, that is, they occupy a specific position in the supply chain, so their market behaviour depends on the reaction of the upstream supply chain players. On the basis of the above, the value of the time needed for the company to make a decision to move to a purchasing resource from an alternate provider, can be expressed by the following equation (Pleschenko, 2011b).

$$T_s = T_a + \sum_{i=1}^n t_i + T_r \quad (3)$$

T_s – the total length of the period of switching;

T_a – the time period necessary for the adaptation of production;

t_i – the duration of the production cycle of i -th level of supply chain;

n – the number of the parent (ascending) links in the supply chain;

T_r – end-user response time.

To understand the possible situation here is an example. Suppose that the enterprise is a manufacturer of inks for printing. During market research procurement department found a potential supplier of chemical components used in the manufacture of polygraphic inks. It is known that terms of delivery suggested by him are more favourable for the enterprise than the price of existing counterparties. Technological department has conducted laboratory and semi-industrial testing of material, which confirmed that it would be suitable for production use instead of the traditional version. However, there is a possibility of hidden defects at subsequent stages.

What makes this situation the enterprise? It directs the pilot batch of ink to the next step in the supply chain that runs to the end user – that is, to a commercial printer to check its technological properties on printing equipment. However this typography would like to be sure that the printed product (packaging material) is suitable for the next customer and decided to try it on technological line for packaging. It cannot be excluded that the mentioned customer also intends to test how his finished product will behave during transportation, storage, and then when implemented in a trading network.

Thus, the potential number of approvals before the final decision is three, and the result is a significant amount of time that can be measured in months. In principle, speaking about the verification of the suitability of the goods by consumers within the supply chain, it is worth noting that the process can be delayed significantly, since it is clear that none of these customers would test a new product at the expense of its current production program.

Of course, the above formula reflects the limit situation because there is no need to wait for any cases response all downstream supply chain down to the final consumer. But at the same time, this can be quite a significant amount of time after which may well be that the previously proposed an alternative supplier conditions today do not apply, either on the market of new, more attractive options. In addition, the material may be unsuitable, and this means that you must look for new options, either to continue the collaboration with the traditional supplier. This is especially important for such areas as purchasing, which is characterized by a high degree of uncertainty and variability in the external environment.

Therefore in our interest to minimize switching time and the number of stages of approval or reducing the time spent on the supply chain. It may be necessary to negotiate with your customer on this subject, and describe him the possible positive result, for example, the best consumer properties, reduced waste or sharing with him part of the resulting effects in the form of discounts.

7. CONCLUSION

We have considered various approaches to organization of purchasing for industrial needs assess their advantages and disadvantages. It is shown that the approaches based on alternative selection if suppliers are preferable. The actions of consumer should provide long-term cooperation within the framework of a array of counter partners. In preparing for the procurement procedures, it is important to evaluate the necessity of transaction costs which is needed for its execution and the expected costs of participants, compare them with the parameters of the transaction and the market situation.

Moreover, it must be borne in mind that the introduction in the mass production of a new resource, even with the best price and technical properties, at the initial

stage would not decrease, and the growth of current charges. It is determined that the amount of possible impact in the form of cost savings when switching from the current supplier to alternative depends not only on the difference of total costs in a given period of time, and duration of the period. The optimal duration of this period contributes to improve the economic efficiency.

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