THE ALGORITHM OF CONTROL PRICING POLICY IN TRADE NETWORKS ON THE MARKET OF FERROUS METALS

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Summary: A detailed study of the problems of price policy control of companies. There is developed the technique of control pricing policy for companies with a wide regional network. There is structured an algorithm for automation of companies pricing policy taking into consideration a regional specific features of companies with wide networks. This algorithm has been tested in the environment of the ERP-system 1C 8.2. Enterprise for trade networks on the market of ferrous metals.

Keywords: algorithm, automation, control, pricing policy, ERP-systems.

Pricing policy is the tool that allows to ensure the planned amount of profit and implementation of the company strategy to achieve the established market positions.

Along with the fact that the price of the product for the company is an important factor that determined the financial results of business, it also plays a key role as a condition for the successful implementation of the goods, in this case, the price as a tactical tool provides the company with a number of advantages [1]:

- First , the use of price does not require additional money, as it takes place with advertising actions, product individualization, promotion etc.;
- Second, users prefer products which expressed in price better than on the basis of advertisement, product individualization and so on;
- Third, even when such sales approaches as individual selling and advertising are basic, price can be used as a powerful tool to support them.

In general, the price should be considered as one of the inherent properties of the product, along with the consumer properties of goods, quality, etc. [2]

In practice, companies use a variety of pricing strategies: the strategy of high prices ("price-skimming"); strategy of low prices, or strategy of " penetration" of the market, tiered pricing strategy, the strategy of preferential prices, the strategy of flexible, elastic prices; strategy of stable, standard, constant prices, not rounded prices strategy, etc.

Before you put into practice a particular pricing policy, it is necessary to regularly monitor the level of prices. Understanding of the dynamics of prices is formed from looking at the prices of actual transactions, exchange, prices of auctions and tenders; offer prices of large companies, reference prices, etc.

It is important to note that the company can change the pricing strategy. At a particular point of time only one pricing strategy can be used.

It is known that:

A. lower limit of price level which are set by the company is the amount of production costs, sales under more lower price will be unprofitable.

B. upper limit which are set for the price is the market price that is formed on the one hand, under the influence of supply and demand, and on the other – competition from suppliers of similar products.

In economics, the basic principle of pricing policy is the reimbursement of the cost of production and sale of products, services, jobs and profit in an amount sufficient to carry out expanded reproduction and paying appropriate taxes to the state, municipalities and education fund of consumption of providing a certain standard of life of employees.

We choose as a target market, the market of ferrous metals and metal products, and examine in detail an approach to automate the process of pricing policy for companies operating in this market through an extensive regional network.

Participant of the metal market used in the practice of their work almost all the main types of prices discounts: discounts of price-list and the reference price; bonus discount for the turnover; discounts in progress for quantity, amount of purchase, serial, and special discounts to buyers in which the seller is concerned , hidden discounts and etc [3].

Selected pricing strategy and a system of discounts affect the pricing entity, taking into account the pricing strategies of competitors, the level of prices are set by common sense is in the range:

- between the low price (cost for production) which is unprofitable, and
- theoretically higher price, demand-driven (market price).

Modern companies offer the market a wide range of goods, works and services. Companies are taking atomization of control processes, throughout using modern ERP – system. Consider the approach to automating the prices of goods from the point of view of the requirements and functionality of the ERP – systems for Example 1C 8.2 Enterprise. This development is adapted and tested for companies working in the metal market, while it can be successfully used to solve similar problems in any other markets.

For enterprises that offer the market a wide range of products that can be clearly classified by the set of characteristics in the information system can be

widely used tools for *characteristics* and *series*. In this case, it is desirable to include *the characteristics* parameters such as: size, length, diameter, class, standard, etc. Such features as: manufacturer, brand name, additional characteristics of a lot – take into account in the *series*. With this approach to defining element *nomenclature* we have the opportunity to lead lot account of goods where the product is a four-dimensional element of $a = a(x_1, x_2, x_3, x_4)$. Using this mechanism provides wide opportunities render reports in various analytical sections.

It is important to note that in lot-account documents is extremely important to reflect the entire set of parameters x_i. In the write-off documents can be limited only by the choice: x_1 or couple (x_1, x_2), or trey (x_1, x_2, x_3).

Let us consider in detail the case where the parties to the documents of the write-off of filtering is done by a pair of parameters (x_1, x_2), and the write-off method is defined by a pair of parameters (x_3, x_4). In this case, the price should be set for each type of goods and the set of its characteristics, that is for each pair (x_1, x_2).

It should be noted that for many products and kits for their performance there is a single price – a feature called price band. For example, the amount of goods that the company operates in the market is more than four thousand, and the number of prices used in this case – (*price groups*) not more than two hundred.

For the elements of an information system 1C 8.2 Enterprise introduce the notation:

$\mathcal{H}_\chi$ — elements of the reference book " *Nomenclature*";

$\mathbb{C}_\mathcal{g}$ — elements of "*NEWPriceGroup Nomenclature*";

$\mathfrak{R}_{\mathbb{C}_\mathcal{g}}$ — a registry entry " *NEWPriceGroup Nomenclature*" is set to the current date to every *name of nomenclature* x_1 and *characteristics* x_2 belonging to a particular price group:

$$\mathfrak{R}_{\mathbb{C}_\mathcal{g}} \supset \left\{ \mathfrak{R}_{\mathbb{C}_{\mathcal{g}(k;j)}} := \left(t;\ \mathcal{H}_{\chi_k};\ \mathbb{C}_{\mathcal{g}_j} \right) \right\} \tag{1}$$

$k = \overline{1,\ \mathcal{N}}$, where $\mathcal{N} \in \mathbb{N}$ — number of products in the product portfolio of the company

$j = \overline{1,\ G}$, where $G \in \mathbb{N}$ — number of price bands in the product portfolio.

$\mathfrak{P}_{r,t}$ — current, at a certain date *price-list* for the range of a given document " *SetPriceNomenclature*".

For the purpose of improving the efficiency of solving this problem and provide a rational approach to price policy of the company developed the document "*NEWSetPriceForPriceGroup*".

This document is intended for installation on the actual date of two arrays of prices:

1. *corporate basic prices* $\{\mathbb{C}_{g}\}$ — boundary (minimum / maximum) at selling prices of certain *corporate basis* (e.g. CPT – *central warehouse*);

where $\{\mathbb{C}_{g}\} := \begin{pmatrix} \mathbb{C}_{g_1} & c_1 \\ \vdots & \vdots \\ \mathbb{C}_{g_j} & c_j \end{pmatrix}$ — values of base prices c_i, $i = \overline{1,\ j}$ for

each element of $\mathbb{C}_{g_1}$, $i = \overline{1,\ j}$ *"NEWPriceGroupNomenclature"*;

2. $\{\Delta\mathbb{C}_{gr}\}$ — set to "*mark-on / (write-down) applied according to corporate basis*" for each item of "*NEWPriceGroupNomenclature*". These values determine the difference (positive / negative) from the *basic corporate price* for each regional office.

Note: for the same price group $\mathbb{C}_{g}$ nomenclature set your own level of prices in each regional office — a unique *level of regional prices* for each price group $\mathbb{C}_{g}$. At the same time, in the same regional office for different price groups $\mathbb{C}_{g}$ nomenclature will be their own values $\{\Delta\mathbb{C}_{gr}\}$.

Settings and competent organization of the directory "*TypePriceNomenclature*" – is the basis of an effective system of control of the company price policy.

Standard features of information system include the construction of *calculated* prices relative to *basis* prices only in relative terms. This is a significant limitation that makes it difficult to build a full-range price policy, for example in the framework of the pricing strategy not rounded prices. The informational system 1C 8.2 is not difficult to create a new author "*TypeCalculatePrice*", in particular for the realization of our objectives established method of calculating the price "*NEWSumProfit*" allowing to operate not only the relative indices markups / markdowns for the settlement prices on *corporate basis*, but widely applied absolute markups/markdowns. Then the standard toolkit "*TypePriceNomenclature*", already with advanced features can be fully used for the construction of the automated control system of the price policy of the company.

In practice, set up three key types of prices:

i. necessarily set up at least one *basic* type of prices, for example: "*CPT-MainStorage (base)*".

ii. group of prices are determined that are "*calculated*" and relative to the *base type* of price for a particular type of pricing method, for example, creates a type of price "*Region-K (regional)*" (*regional price*) which is *calculated* relative to the *base price* type "*CPT-MainStorage (base)*" using the method of calculating prices "*NEW-SumProfit*".

iii. defined group of prices that are "*calculated*" relative to the *base price type* for a particular type of method of prices calculation at a lower level of application of price policy, such as: the types of prices "*Region-K (A Retail)*", "*Region-K (B SmollGrossSale)*", "*Region-K (C GrossSale)*" are "*calculated*" relatively to the *base price type* "*CPT MainStorage (base)*" and implemented by way of price calculation "*NEW-SumProfit*".

In this case, *regional price* will be previously installed minimum selling price for this particular regional office, and the array $\{\Delta\mathbb{C}_{\mathcal{g}r}\}$ will reflect the deviation of small-gross-sale and retail prices from the *base price* in the region of sale.

Designed in 1C 8.2 Enterprise mechanism generates the document "*SetPriceNomenclature*" in which set prices for the price group $\mathbb{C}_{\mathcal{g}}$ already deployed for all elements of the price grope, that is formed regional current price list for the certain date $\mathfrak{P}_{r,t}$ for all elements of the *nomenclature* and each *characteristics*:

$$\mathfrak{P}_{r,t} := \{\mathbb{C}_{\mathcal{g}}\} \odot \{\Delta\mathbb{C}_{\mathcal{g}r}\}, \tag{2}$$

where $\odot$ — o an operation that implements any way of *calculating prices* used in setting price types of directory "*TypePriceNomenclature*".

The prices identified in document "*SetPriceNomenclature*" are the basis for creating of printed versions of price-lists of the company for the appropriate sales divisions.

CONCLUSIONS

Studied in detail the problems of controlling of the companies price policy working in the metal market. There is developed the technique of control pricing policy for companies with a wide regional network. There is structured an algorithm for automation of companies pricing policy taking into consideration a regional specific features of companies with wide networks. This algorithm has been tested in the environment of the ERP-system 1C 8.2. Enterprise for trade networks on the market of ferrous metals.

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