

DEVELOPMENT OF THE MODEL OF ASSEMBLY INDUSTRIAL COMPLEXES MANAGEMENT (on the example of JSC "AVTOVAZ")

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The article views the development of a new model which makes it possible to choose an effective strategy of taking managerial decisions at an industrial complex with an account of interaction with suppliers and trading network.

The task of effective management of assembly industrial complexes, that is the development of a new model and method of management adapted to real market conditions is very up-to-date.

When there is coordinated interaction between assembly industrial complex, suppliers and trading network it is suggested to form models showing the process of making decisions. As interaction is a set of material, financial and information ties it is necessary to view all ties and parameters characterizing these interactions.

Assembly industrial complex receives necessary components and blocks from suppliers, assemble them and send to trading network which sells the product to the consumer.

Modeling of material flows of unfinished goods, components and raw materials assumes that functional dependence of necessary stock and the volume of finished goods are known. All this is defined by a concrete production technology of industrial complex and suppliers and can be calculated on the basis of the system of material needs planning. It can be shown as a tree which reflects the consequence of production and the inventory of all the components specifications, places where they were bought and produced and time necessary to produce or supply them. On the lower branches of the tree there are the components, blocks and raw materials which the enterprise does not produce but buys from suppliers.

On the first level of production technology the product consists of two blocks A and B and unit F , which are assembled by the enterprise. On the second level block A consists of two units C and D , which are also assembled by the enterprise and material j , which is bought from the supplier. In its turn on the second level

of technology block B consists of unit E self-made and some components bought from a supplier. On the third level of technology units C , D , E , F are produced from components and raw materials of the lowest level all bought from suppliers. So, all components are summed up assuming the date of their order and supply and the date of production of blocks and units by the enterprise and volumes and dates of stock fulfillment.

Gross profit is modeled as a sum of profits received from all enterprises of trading network and each profit is retail receipts minus

commission: $R_C = \sum_{k=1}^K (R_{\Sigma k} - R_k)$, where R_C

is gross profit of industrial complex, $R_{\Sigma k}$ and R_k - retail receipts and commission of an enterprise k of trading network correspondingly, K is a number of enterprises selling the goods produced by the industrial complex.

Taking all this into account we formed the model of decision taking at the assembly industrial complex. At the level of profitability given by the investors it is necessary to establish such level of price markup and the date of payment for finished goods for trading network enterprises as well as price markup and dates of payment for components for suppliers to make the period of recoupment of modernization of trade and production premises acceptable for investors of trading network and suppliers. At the same time industrial complex should suggest such terms of contracts that the number of trading network enterprises is sufficient to sell finished goods, the number of suppliers is sufficient to satisfy the need in components and maximum utilization of production capacity is provided.

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Any combination of dates of payment and price markups calculated according to the given model will provide acceptable period of recoupment for trading network enterprises thus making them signing contracts at the terms suggested by industrial complex.

Burkov V.N. Theory of Active Systems: state and perspectives / V.N. Burkov, D.A. Novikov. M., 1999.

Barvinok A.V. Mechanism of Coordinated Cooperation when Carrying Out Investment Projects / A.V. Barvinok, V.D. Bogatyrev, D. Z. Vagapova, E.R. Vagapov, M.G. Sorokina // Problems of Machine-Building and Automatization. 2003. №3.

Bogatyrev V.D. Economic and Mathematic Models and Algorithms of Management of Wholesale Trade

Enterprise and its Counteragents / V.D. Bogatyrev, I.A. Kaluzhskih // Economic Sciences. 2007. № 9.

Bogatyrev V.D. Mechanism of Management of Interrelation in One-Level Organizational System // Automatics and Telemechanics. 2005. № 5.

Bogatyrev V.D. Mechanism of Coordinated Interrelation of Creditor and Debtor during Bankruptcy Procedure // Economic Sciences. 2003. № 5.

Barvinok A.V. Modeling of the Task of Parametric Coordination in the Supplier-Consumer System in Industrial Complex / A.V. Barvinok, V.D. Bogatyrev, D.G. Grishanov, V.V. Sidorov // Bulletin of Samara State Aerocosmic University. 2003. № 2.

Bogatyrev V.D. Management of Sales on the example of JSC "AVTOVAZ" // Management of Big Systems. 2005. № 10.

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