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**PROVIDING FINANCIAL SUSTAINABILITY
OF CORPORATE INDUSTRIAL FIRMS**

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**ОБЕСПЕЧЕНИЕ ФИНАНСОВОЙ УСТОЙЧИВОСТИ
КОРПОРАТИВНЫХ ПРОМЫШЛЕННЫХ ФИРМ**

Building up the balance between material and financial flows of individual enterprises of corporate industrial firms specifies production and economic relations and proportions. In order to optimize the contribution of enterprises to overall performance results it is used industrial and economic indicators characterizing product manufacturing, distribution and sale, material supply mechanisms and resource support. These indicators evaluate significance of each enterprise through firm-wide economic results.

CORPORATIVE FIRM; ACTIVITY; INDICATORS; PRODUCT DISTRIBUTION; BALANCE; MATERIAL AND FINANCIAL FLOWS.

Построение баланса материально-финансовых потоков отдельных предприятий корпоративных промышленных фирм дает характеристику производственно-хозяйственных связей и пропорций. Для оптимизации вклада предприятий в общие результаты используются показатели производственно-хозяйственной деятельности, характеризующие производство, распределение и реализацию продукции, механизмы материально-технического снабжения и ресурсного обеспечения. Эти показатели дают оценку значимости каждого предприятия в общефирменных экономических результатах.

КОРПОРАТИВНАЯ ФИРМА; ДЕЯТЕЛЬНОСТЬ; ПОКАЗАТЕЛИ; РАСПРЕДЕЛЕНИЕ ПРОДУКЦИИ; БАЛАНС; МАТЕРИАЛЬНО-ФИНАНСОВЫЕ ПОТОКИ.

Large corporate industrial firms are the backbone of today's social and economic system of any developed country. Industrial corporations are the only forms of integrating financial, industrial and trade capital with branched participation system. However it should be noticed unlike other popular forms of integration and entrepreneurship organization in modern market economy, particular large industrial firms, under the control of a head company, combine legally and economically individual firms and enterprises, relating to different economy branches, banks and other credit organizations, industrial, trade and transport companies. Participants of such corporations independently perform on domestic and international markets, and functions of investment strategic management, production and sales and financial control as well are delegated to the parent company.

Among the aims of forming industrial corporations, special attention should be paid to strengthening their domestic and international market shares, enhancing sustainability, efficiency and competitive performance. Possibility to form gross corporate entities enables to organize effective using and reallocating human, technological and financial power, provides necessary facilities for optimizing production-partner contacts in high-tech goods turnout, fosters expanded investment and export potential. In the context of modern market economy it is high money that is able to provide employing novel technologies and peak production efficiency. But it requires to design new modern approaches to solving problems dealing with managing improvement of huge industrial firms performance through appropriate choosing destinations and mechanisms of increasing its performance efficiency [2, 5, 10].

Resource providing current and perspective performance of corporate industrial firms is the key management task. It implies forming management mechanism by way of joint efforts of individual enterprises, models of total costs optimization, and is intended to increasing efficiency of restricted resources employment and maximizing its eventual operating outcome. However resource starvation and low quality of its employment don't enable business entities to successfully develop and implement corporate strategy.

For adjusting optimal production and economic relations and proportions between enterprises of corporate industrial firms on condition that resource providing is justified it is necessary that the material and financial flows balance should be built up; the scheme of this model can be seen on the Fig. 1 [1, 4, 6–9].

Square matrix of f_{ij} elements shows fixed assets value created by i enterprise and used by j

enterprise of the firm. Here are following correct pars:

$$\begin{cases} F_j = \sum_{i=1}^m f_{ij}; & F'_i = \sum_{j=1}^m f_{ij}; & F_j = F'_j; & \text{if } j = i; \\ \sum_{j=1}^m F_j = \sum_{j=1}^m F'_j, \end{cases}$$

where F_j is fixed assets value used by j enterprise; F'_i is fixed assets value created by i enterprise.

In I quadrant $||x_{ij}||$ square matrix means flows of material and supplies and producer services in enterprises of the corporate industrial firm, x_{ij} means costs material and supplies produced by i enterprise and consumed by j enterprise. For this quadrant equals (1) are also true. In II quadrant it is shown the ultimate product, and that of i enterprise is equal to:

$$Y'_i = C_i + K_i + E_i.$$

	1	2	...	j	...	m	Sum									
1	$ f_{ij} $						F'_i									
⋮																
m																
Total	F_j						$\sum_{j=1}^m F_j = \sum_{i=1}^m F'_i$									
i	j						X'_i	Consumption	Investments	Revenue	Total	Ultimate consumers				
	1	2	...	j	...	m						1	2	...	n	Total
1	$ x_{ij} $											Π C_i	K_i	E_i	X_i	$ e_i $
m																
Total	X'_i						$\sum_{j=1}^m X'_j = \sum_{i=1}^m X_i$	$\sum_{i=1}^m C_i$	$\sum_{i=1}^m K_i$	$\sum_{i=1}^m E_i$	$\sum_{i=1}^m X_i$	E_i	$\sum_{i=1}^n E_i = \sum_{i=1}^m E'_i$			
U	III			U_j			X^m_j	Π C_j	K_j	E_j	X_j					
D				D_j			$\sum_{j=1}^m D_j$	$D^{(C)}$	$D^{(K)}$	$D^{(E)}$	ΣD					
W				W_j			$\sum_{j=1}^m W_j$	$W^{(C)}$	$W^{(K)}$	$W^{(E)}$	ΣW					
P				P_j			$\sum_{j=1}^m P_j$	$P^{(C)}$	$P^{(K)}$	$P^{(E)}$	ΣP					
Total				X_j			$\sum_{j=1}^m X_j$	C	K	E	$C+K+E$					



		1	2	...	j	...	4	m	Sum	Consumption	Investments	Revenue	Total	
	1	k _{ij}						K _i '						
	...													
	m													
	Итого	K _j						∑ _{j=1} ^m K _j = ∑ _{i=1} ^m K _i *						
Total	Suppliers	1	j											
	1 ... n		1	2	...	j	...	m						
U _i ''	u _{il} *	1	u _{ij}						U _i *	U _i ^(C)	U _i ^(K)	U _i ^(E)	U _i	
		m												
∑ _{i=1} ⁿ U _i = ∑ _{i=1} ^m U _i *	U _i	Total	U _i							U ^(C)	U ^(K)	U ^(E)	∑ _{i=1} ⁿ U _i = ∑ _{i=1} ^m U _i *	

Fig. 1. The scheme of balance model between material and financial flows of the corporate industrial firm

Here C_i , K_i и E_i is ultimate product of i enterprise arrived correspondently to consumption fund, capital construction and export.

Total cost of ultimate product of the industrial firm will be equal to:

$$\sum_{i=1}^m (C_i + K_i + E_i).$$

Gross product sum of i enterprise is also equal to:

$$X_i = X_i^* + Y_i = \sum_{j=1}^m x_{ij} + C_i + K_i + E_i.$$

III quadrant shows the net product, amortization charges and import to the industrial firm. Here U_j is cost of imported product used by j enterprise; D_j is amount of amortization charges of j enterprise; W_j is wage of j enterprise; Π_j are net earnings of j enterprise (profit).

IV quadrant shows redistributing ultimate and net product between consumption fund, capital construction and export.

Total product of j enterprise will be equal to:

$$X_j = X_j' + U_j + D_j + W_j + \Pi_j.$$

Here also $X_j = X_j'$, if $j = i$.

Under the III and IV quadrants there are $\|K_{ij}\|$, $\|u_{ij}\|$ and $\|u_{i\ell}'\|$ matrixes.

K_{ij} shows product quantity of i enterprise invested in capital construction of j enterprise; u_{ij} are items imported by i enterprise and consumed by j enterprise; $u_{i\ell}'$ are items imported by i enterprise from ℓ supplier ($\ell = 1, 2, \dots, n$).

To the right of $\|u_{ij}\|$ matrix there is distribution of the product imported by i enterprise and consumed as an ultimate product.

To the right of II quadrant there is distribution of the product sold by i enterprise between ultimate consumers (ℓ , $\ell = 1, 2, \dots, n$).

Totals and results in each quadrant are calculated by summing either in columns or rows of corresponding matrixes.

By using the balance we can calculate and analyze total proportions and highlights of the industrial firm indefinable in usual accounting. It mostly refers to highlights, specifying production and distribution of the firm's product:

$$\sum_{j=1}^m U_j = \sum_{i=1}^n U_i^*$$

– balance of consumed and manufactured (gross) product in the industrial firm

$$\alpha_R = \frac{\sum_i (C_i + K_i)}{\sum_i X_i};$$

– highlights specifying the role of a supplied product and incompany production in providing the incompany consumption

$$\alpha_E = \frac{\sum_i U_i''}{\sum_i (C_i + K_i)};$$

$$\alpha_X = \frac{\sum_i (C_i + K_i) - \sum_\ell U_\ell}{\sum_i (C_i + K_i)};$$

– highlights specifying the role of sold production in industrial firm's economy

$$\alpha_B = \frac{\sum_\ell E_\ell}{\sum_i X_i} \text{ – towards gross product,}$$

$$\alpha_k = \frac{\sum_\ell E_\ell}{\sum_i Y_i'} \text{ – towards ultimate product.}$$

Calculating production-consumption balance can be done also for each enterprise represented in the balance. For analyzing each enterprise's role in production and consumption of the firm, consider the following highlights:

share of sold production in industrial firm's specialization by i product turnout

$$\gamma_i = \frac{E_i'}{X_i};$$

share of supplied production in general consumption of i product in the firm

$$\delta_i = \frac{U_i''}{C_i + K_i};$$

coefficient specifying supplied and sold i product

$$\lambda_i = \frac{U_i'' - E_i}{X_i}.$$

Balance of these coefficients is equal to:

$$\lambda_i = \frac{\delta_i - \gamma_i}{1 - \delta_i}.$$

For analyzing enterprises' correlation degree in both product consumption of other enterprises

and distribution of its production it is calculated highlights of incompany turnover between enterprises (L_{ij}):

$$L_{ij} = x_{ij} + x_{ji},$$

where x_{ij} is volume of product supply of i enterprise to j enterprise, or in matrix form:

$$L = X + X^T.$$

Enterprises' correlation degree can be defined with firm incompany turnover coefficients:

$$l_{ij} = \frac{L_{ij}}{\sum_i L_{ij}}.$$

Coefficient $l_{ij} > 0,5$ means dominating correlation between i and j enterprises.

Based on these highlights a range of other total proportions in the industrial firm economy can be calculated. However, because economical literature and practice don't still suggest recommendable values of highlights considered above, specifying resource providing of the firm, it is necessary, through monitoring industrial firm performance – object of research – to form initial statistical database taking into account branch specific nature and market behavior. Based on ready-made information by considered total of value highlights, with a glance to their forecasting, it is developed the system of managerial decisions on production and economic performance of both individual enterprises and firms in general.

Besides, inter-form comparison of calculated highlights can be of especial importance. The comparison of balances of the material and financial flows of industrial firms can be carried out by highlights considered above.

Moreover one can consider one of the methods of assessing cost structure similarity in several industrial firms. This method can be coefficient usage of mean difference in costs of each enterprise

$$\rho_i = \frac{\sum_i (\alpha_{ij}^\alpha - \alpha_{ij}^\beta)}{\frac{1}{2} \sum_i (\alpha_{ij}^\alpha + \alpha_{ij}^\beta)},$$



where α_{ij} is coefficient of direct costs on products in i enterprise per one unit of j enterprise's product; α , β are industrial firms' indexes.

The more value of ρ_i is, the more differences are in production costs structure for i enterprise in compared firms.

Summing up for identifying production and financial relations and proportions between enterprises of corporate industrial firms it is built up the balance between material and financial flows. On its basement highlights of production and economic performance of the firm are

analyzed and can't be determined by accounting data. It concerns mainly those highlights specifying production and distribution of the product created in corporate unit and used for defining each enterprise's role in total firm performance results. Therefore the suggested model of resource providing performance of corporate industrial structures is the economically mathematical tool for complex corporate system management, which implementing enables to increase efficiency and sustainability of operating and developing corporate industrial firm of different branches of national economy.

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