

# Advantages of Vertical Integrated Enterprises (Under Light Industry Enterprises)

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## **Article Info**

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**Abstract:** Thanks to the introduction of modern management strategies in the world, the scale of the effective use of vertical integration in innovative development of the industry is expanding. Therefore, the article deals with the introduction of modern innovative management strategies, the improvement of the organizational and economic mechanisms of processes ranging from the primary raw material to finished products, the effect of exogenous and endogenous factors affecting the production process, and the development of an effective organizational-economic mechanism of innovation activities of industrial enterprises about

**Purpose** - Developing scientific recommendations and practical recommendations aimed at improving the efficiency of the management of vertical integrated industrial enterprises based on innovation development.

**Design/methodology/approach**-In the study, statistical analysis, experimental evaluation, economic mathematics, regression and correlation analysis, factor analysis methods.

**Originality/value** - The relevance and accuracy of the approaches and methods used in the research is determined by the fact that the statistical data is based on the data of the State Statistics Committee of the Republic of Uzbekistan and other officially published data, and the relevant conclusions,

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## **Introduction**

Structural changes in Uzbekistan, further enhancement of efforts to modernize the economy require broad introduction of advanced techniques and technologies in industrial enterprises, as well as expanding the range of innovative activities and their effective utilization. In the transition of the country to a market economy, the emergence of differentiation-based industries, ie the development of associations in the form of industrial enterprises, led to the emergence of ownership of enterprises, joint-stock companies, affiliated companies, limited liability companies, and

their own investments to integrate their activities into the international community. conditions.

In developed countries, the strategic management of industrial enterprises is focused on strategic and systematic management of innovation, which results in a more effective development of a particular industry, further enhancement of market mechanisms of efficient management and innovation activity. Because development of private property requires increasing the efficiency of innovation in industrial enterprises. Government protection of

private property and proprietary rights allows investors to improve the innovation environment.

It is noteworthy that the study of problems facing the further development of innovative activities of enterprises shows that the effectiveness of innovation activity depends primarily on the level of development of institutional bases for the formation of a single legal framework within the framework of laws aimed at improving the innovation environment.

Promotion of research and innovation activities in the five priorities of the Republic of Uzbekistan (Mirziyoev, 2017) in 2017-2021, creating effective mechanisms for the implementation of scientific and innovation achievements, specialized scientific and experimental research institutes and research institutes laboratories, hi-tech centers and technoparks. The above-mentioned tasks indicate that it is necessary to develop effective innovative approaches in business management.

According to the results of the research, innovation activities of various business entities operating in the Republic of Uzbekistan should include a number of positive aspects. Including:

- introduction of new, improved production in production and reduction of all types of production costs;

- reducing the costs of products that fully meet the environmental norms;

- continual improvement of consumption and quality of produced products;

- expanding the production of science-based products;

- ensuring integration of different property-based industries;

- requires the establishment of a modern management system for integrated industrial enterprises.

### Literature review

A number of economists in scenarios on the improvement of organizational and economic aspects of management in operating enterprises, the impact on innovation processes in industrial enterprises, the main trends in attracting innovation and the development of innovation activity in their implementation, including a set of economists, including understanding, I.Assoff (1999) on adaptation pathways is the most comprehensive and optimistic method of management M. Mischon, M. Albert, F.Xedouri (2000), the ultimate controlling stakeholder of the largest corporations, about the key principles and concepts of management,

official organizations, commercial and nonprofit, small and large organizations, and their effective management La Porta R., LopezdeSilanes F., Shleifer A. (1999).

Richard N. Langlois, Paul L. Robertson (1989), discusses vertical integration between storage, transportation, distribution and processing of agricultural products in terms of the content and significance of vertical integration, its effectiveness and car industry , and Anne Wairimu Maina and Stanley Kavale (2016) on how to effectively relate vertical integration as an organizational strategy, and the cost effectiveness of their effectiveness, BSdderder, F. Byramjee (2012), and other scientists in the field of Optimization of Functional Controls in Business Systems. Despite the considerable contribution of foreign researchers to the field of economics, they do not take into account the peculiarities of the research, based on the network characteristics of the use of vertical integration, which is the most advanced methods of modern management in enterprises.

N.V.Smirnova (2017) on the importance and advantages of vertical integration in the major institutional structures of innovation ideas in the Commonwealth of Independent States as a mechanism for the production of products with high added value, according to the possible signs and classifications of the vertical integrated structures of processing enterprises. Zimina A.A. (2014), the overall profitability of the vertical integration and the return on equity, as well as the sale and repayment of debt on the example of agro-industrial complex Pinkevich I.K. (2010), future successes, problems and perspectives for future development, including horizontal (West-East) and vertical (North-South) integration Naryshkin S.E. (2014) and vertical integration production to enhance the relationships between the technology and distribution chains, Ivanov Yu.V. (2000). In these research studies, factors such as efficiency in economic activity, curtailment of transaction costs, and development of corporate relationships have been studied in the use of management strategies for vertical integration, with the study of the effects of vertical integration on innovative activities of enterprises.

Although the results of the above-mentioned economists 'research have been widely used today, they have been focused on the peculiarities of the use of vertical integration in the management of innovative activities related to various forms of production, the introduction and improvement of innovative

development mechanisms of industrial enterprises' activities and the use of vertical integration. The focus of the research is whether the subject is selected cause.

### Hypotheses

In order to increase the level of development of innovation activity of industrial enterprises in the Republic of Uzbekistan, it is necessary to create necessary conditions in the coming years in line with the strategic objectives of innovative development, modernization, technical and technological renewal of the economy. Because the industrial enterprises of developed countries pay special attention to the strategic management of investments in increasing innovation activity. This, in turn, implies increasing the effectiveness of the management of vertical integrated industrial enterprises based on the development of innovative activities through the integration of various property-based industrial enterprises in the country's economy and the establishment of a modern management system in them.

Vertical integration - association of enterprise organizations that conducts appropriate technological operations (Daron Acemoglu et al., 2010). The diversity of understanding of vertical integration indicates that it is one of the complex forms of organization that serves different economic goals and results in different consequences. Therefore, taking into account the peculiarities of the management of integrated national companies in modern conditions, it is desirable for national corporations to formulate, improve and introduce effective methods of strategic management and financial management.

H1. The vertical integration of enterprises ensures the control and enforcement, delivery, in general, reducing the cost associated with businesses to have economic assets and guarantee their exclusive rights.

A new organization that is based on enterprise integration can use synergistic effectiveness, which means that the results of the merger of these firms exceed the results of the business of scattered enterprises.

H2. The modern management theory of development, which implies the integration of production, can lead to competitive advantages by providing vertical integration.

Vertical integration helps to increase the competitiveness of participating enterprises, increase profitability through increased cost effectiveness and cost optimization.

"The concept of the market is gradually disappearing for a number of commodities and intermediate products, as most of these products are sold within the framework of the transmission systems or through vertically integrated structures through an independent contractor, and a long-term contracting mechanism is used" (Blair, 2005).

Depending on the characteristics, capacities and conditions of the national economy, the difference between the model and management model should be that the managers need to be involved in solving their problems, starting with the strategy of the society, and in making the right decisions.

### Method

The Republic of Uzbekistan plays a leading role in the development and promotion of light industry enterprises with sufficient raw materials and qualified personnel, as well as labor force. This network is rapidly developing on the basis of the right policy pursued by the government. Cotton fiber grown in the country, as the main raw material for light industry, plays an important role in this regard.

The analysis shows that, despite the fact that world-class scientists have discovered several different chemical fibers, cotton fiber is one of the world's leading natural resources and the demand for it is constantly increasing. In this sense, it is necessary to use the existing opportunities, apply new management methods, introduce modern standards and methods of corporate governance, and strengthen the role of shareholders in the strategic management of enterprises.

According to the preliminary statistical data provided in the Republic of Uzbekistan in 2017, in terms of structural changes in the economy, 5812 enterprises in the textile sector are the subjects of independent small businesses and 4585 enterprises of the Uztishkimixanoat Association. This, in turn, contributed to the increase in the share of textile, apparel, leather and related products in the structure of industrial products.

These statistical data show that in order to assess and analyze the effectiveness of vertical integration of industrial enterprises based on the development of innovative innovation in vertical integrated enterprises in the country, first of all, it is necessary to study the production and economic status of separate enterprises operating in both directions using the selection method.

Nowadays, the theory and practice of economics have studied and evaluated the effectiveness of enterprise production in general and the effectiveness of management, particularly in the literature. One of them is Petukhov R.M. the efficiency indicators in its work and the method of its evaluation. He described these methods as follows (Petukhov, 2005):

$$E = \Delta P / C \quad (1)$$

Increased profitability of the total cost of economic complexes, its sectors, and also the types of processing of fixed assets ( $\Delta P$ ) is calculated by the ratio of capital inflows ( $C$ ). In fact, the following formula is used to estimate the effectiveness of vertical integrated enterprises:

$$E_T = \frac{\sum_{i=1}^n (P - \bar{P})}{\sum_{i=1}^n C_i} \quad i = 1, 2, \dots, n \quad (2)$$

Here:  $E_T$ -overall productivity;

$P$  - the benefits of production from each industry or enterprise;

$\bar{P}$  - Average earnings per share;

$C_i$  - the volume of capital invested in integrated enterprises.

Comparison of expenses when comparing options of economic and technical decisions in the construction of the enterprise or complexes, modernization of the old ones. If one of the options compares to a low investment (capital expenditure), it provides a low cost at the same time, and in the same situation, it is recognized as a win-win economy. In such circumstances, doubling the effect is achieved: the cost savings and the cost savings, while increasing the productivity, the cost savings, and the cost of operating costs are achieved through additional investments. In these conditions, the coverage is based on the optimal option. ( $T$ ) or additional capital inflows, or ( $E$ ), the comparative values are:

$$T = \frac{(K_i - K_{i-1})}{(C_i - C_{i-1})} < T_{N \text{ or } E} = \frac{(C_i - C_{i-1})}{(K_i - K_{i-1})} > E_C \quad (3)$$

In this,  $K_i > K_{i-1}$  and  $C_{i-1} < C_i$ ,  $K_{i-1}$ ,  $K_i$  capital values by options;

$T_N, E_C$ -coefficient of efficiency of coefficient of comparison of regulatory and capital inflows.

$T < T_N \text{ or } E > E_C$  is considered to be the optimal option if additional capital expenditure is required (greater capital capacity),  $E_C$  on the contrary,  $T > T_N \text{ or } E < E_C$  -less capacity.

In practice, the cost of choosing the optimal option (two and three options) is applied to the generic formulas, ie the coefficient of correlation of formula change or formula of additional capital when choosing the optimal variant of coverage. In this case, the criterion for the optimal option is the minimum deductible of the expenses. This is a cumulative amount that is brought to the same size as minimizing current and one-time costs. Determining this is based on the following formula.

$$Z_{ni} = C_i + E_n K_i \rightarrow \min \quad (4)$$

In this,  $Z_{ni}$ -costs incurred on an option basis;

$C_i$ -current expenditure per variant;

$K_i$ -capital injections for each option;

$E_n$ -the economic efficiency ratio of capital investments.

Abchuk.V.A, an economist who has developed one of the methods of evaluating the effectiveness of audits, based on indicators of profitability, profitability, profitability and resource utilization of management efficiency (Abchuk, 2002). One of the methods of evaluating the effectiveness of management is that of Sh.N.Zainutdinov and A.T. Shermukhammedov's book "Theory of management" (Zaynutdinov, 2014). This approach, which evaluates the effectiveness of management, is one of the main ways in which we think the effectiveness of management in industrial enterprises. Here are two major approaches: cost minimization and profit maximization. The first approach is determined by the following formula:

$$3_{ni} = C_i + \overrightarrow{E_n \min} \quad (5)$$

In this,  $3_{ni}$ -cost of option;

$C_i$ -Current expenses on this option;

$E_n$ -the normative coefficient for comparison of economic efficiency of capital investments.

The second approach is based on the following formula:

$$\mathfrak{A}_y = f(\Pi_B + \overrightarrow{Y_B})_{\max} \quad (6)$$

At the same time, use  $P_v$  and  $I_v$ -capabilities available in enterprises and organizations.

The total annual economic effect is determined by the equation::

$$\mathfrak{A}_{\text{шй}} = \mathfrak{A}_{\text{шй}} - 3_y * E_n \quad (7)$$

In this,  $\mathcal{E}_n$ -annual economic effect, UZS;  
 $\mathcal{E}_{\text{шн}}$ -annual and conditional savings, UZS;  
 $\mathcal{Z}_y$ -one-time expenses, UZS;  
 $E_n$ -coefficient of specific economic efficiency.  
 Management efficiency can be calculated in two different ways:

$$\mathcal{E}_n = P_k \div \mathcal{Z} \text{ and } \mathcal{E}_{\text{шн}} = P_6 \div \mathcal{Z}_6 \quad (8)$$

In this,  $\mathcal{E}_n$ -annual management efficiency;  
 $P_k$ -last result (effectiveness deducted from enterprise)  
 $P_6$ -only the results of the management function;  
 $\mathcal{Z}_6$ -management costs.  
 Costs per management are determined as follows:

$$\mathcal{Z}_6 = K + H \quad (9)$$

In this, K-capital expenditures, UZS;  
 H-non-capital expenditures.

Thus, the methods of evaluating the effectiveness of enterprise management suggest that the introduction of new management methods and capacities in the development of modern enterprises with vertical integration leads to the correctness of the effectiveness of enterprise production. From our point of view, the method of productivity assessment is one aspect of this problem.

However, it should be noted that the above formulas do not provide accurate and accurate information. In this context, the macroeconomic indicators forecasting, risk-free and uncertainty optimal economic decision-making through the use of econometric methods and models to deepen the changing competition environment and market conditions in the context of modernization of the economy, and subsequent monitoring of these decisions by computer analyze theoretical and practical aspects of the topics of econometrics, econometric modeling of the process reasonable. This, in turn, allows you to develop scientific conclusions and recommendations based on results.

## Results

Nowadays, the results are obtained with the help of the correlation-regression analysis models of natural phenomena, the unconscious secrets of complex economic and social processes. Correlation-

regression analysis methods have become a daily, effective, and effective tool for the economist-expert, as the spreadsheets of modern computers are provided with correlation-regression analysis.

The choice of regression calculations and best regression equations serves as an invaluable and universal weapon in many economic sectors: marketing, trade, medicine, modeling of production enterprises, forecasting business and research. Effective actions of entities operating under a complex market economy depend on their well-coordinated market analysis of the market and the necessary decisions.

At the same time, models and models of modeling, modeling, demonstration of the results obtained from the results of modeling, will make practical use of the solutions in the market economy. Econometric modeling in the case of certain economic objects, studying the factors affecting the object and assessing the effectiveness of the model will help to model the problem and make economic and mathematical studies on various variants of the computer and to make the economical and mathematical interpretation of the results. Analyzed economic and mathematical models and methods allow optimal decision making in market relations. Models should be created after the economic-mathematical models are based on real processes and they have been tested for their significance by different criteria.

In the process of creating econometric models using a correlation-regression analysis, the latent yet unobservable, hidden laws of the multilateral economy, which ensures effective decision-making by producers and consumers.

The vertical integration of the economic sectors of the Republic of Uzbekistan on the basis of structural transformation is crucial not only for the development of network production, but also for the improvement of innovative activity management. In this regard, it is possible to thoroughly study the state of vertical integration processes in innovative activity of enterprises through econometric analysis of enterprises and non-member enterprises of the Uzbek textile industry "Uztukimachilik sanoat".

For this purpose, the cost of products (goods, works and services) –  $X_1$ , the net profit from the sale of products (goods, works and services) -  $X_2$ , the number of enterprises affecting the production of Y - members of the Association "Uztukimachilik sanoat"

The economical indicators are selected based on  $X_3$ , the starting value of fixed assets -  $X_4$  and depreciation of fixed assets -  $X_5$  (Savitskaya, 2004).

Based on selected factors, their level of interconnection can be determined through the correlation coefficient in the EXCEL program. Table 1 shows that there is a strong link between the factors

chosen and the factor chosen because of the fact that there is no multicollarity between the factors, because the relationship between the factors is intense and that the conditions are fulfilled  $|r_{x_1, x_2}| < 0,8$ , can be created. Regression equation shows the functional relationship between the factors selected by the factor and the selected factors. (Table 1).

**Table 1**

**Correlation analysis of economic indicators of the member-states of the Association "Uztukimachilikanoat"**

	Y	X <sub>1</sub>	X <sub>2</sub>	X <sub>3</sub>	X <sub>4</sub>	X <sub>5</sub>
Y	1					
X <sub>1</sub>	0,933385	1				
X <sub>2</sub>	0,9836894	0,7681273	1			
X <sub>3</sub>	0,9693652	0,7472270	0,6935444	1		
X <sub>4</sub>	0,9422892	0,780038	0,7812438	0,7762072	1	
X <sub>5</sub>	0,9166932	0,780446	0,6701967	0,5661216	0,7926793	1

Source: author's work on the basis of the data from the State Statistics Committee of the Republic of Uzbekistan

It is best to use the most effective Eviews software to create a regression equation. At the same time it is necessary to check the reliability and acceptability of definite regression equations on the

basis of certain criteria. The smallest squares (Gauss-Newton / Marquardt steps) were used in the data scale "Akaike", "Schwarz" and "Hannan-Quinn".

**Table 2**

**The results of reliability and consistency of the regression equation based on the mezzanine**

R-squared	0.896353	Mean dependent var	108.6350
Adjusted R-squared	0.879331	S.D. dependent var	56.00613
S.E. of regression	3.682046	Akaike info criterion	9.794668
Sum squared resid	84.91895	Schwarz criterion	9.158121
Log likelihood	-28.76801	Hannan-Quinn criter.	9.724103
F-statistic	27.80241	Durbin-Watson stat	1.852415
Prob(F-statistic)	0.001270		

Source: The author's research results

The statistical criterion of this model, which allows the test of the Akaike-AIC = 9,79, Schwarz-BIC = 9,16 and Hannan-Quinn-HQ = 9,72 and the first sequence of elements to test the motor vehicle correction - Addictive regression equation, determined by Durbin-Watson-DW = 1.85, is expressed as:

$$Y = 211,99 + 0,96 \cdot X_1 - 0,0087 \cdot X_2 + 0,079 \cdot X_3 + 0,043 \cdot X_4 - 0,064 \cdot X_5 \quad (10)$$

Here: Y - production capacity of enterprises;

X<sub>1</sub> - number of enterprises;

X<sub>2</sub> - prime cost of goods (works, services);

X<sub>3</sub> - net proceeds from sale of products (goods, works and services);

X<sub>4</sub> - Starting amount of fixed assets;

X<sub>5</sub> - depreciation of fixed assets;

According to the model (10), in current conditions, the increase in the number of member enterprises established by the Association «Uztukimachilikanoat» to 10 units will increase the volume of production by 9.6 units, net sales of products (goods, works and services) - 0.8 units the starting value of the fixed assets was 0.4 times higher than the surplus.

However, it will increase the production of goods at the enterprises by 0.9 and 6.4 units, respectively, due to the reduction of the cost of goods

(goods, works and services) and the depreciation of fixed assets by 100 units.

If we analyze the effectiveness of governance in vertical integrated enterprises, it would be desirable for us to make a profit analysis of these enterprises. because the high efficiency of production is primarily to do its job correctly and efficiently. For this reason, the net profit of the member companies of the

Association "Uztukimachiliksanoat" - Y and the factors affecting it are analyzed on the basis of functional links between  $X_1$ , benefits  $X_2$ , period  $X_3$  and fixed assets -  $X_4$  This will allow you to make accurate scientific conclusions about the selected industry. For this purpose correlation between the selected parameters is determined in the EXCEL program and the result is summarized in Table 3.

**Table 3**  
**The correlation link between pure benefits and factors affecting it**

	Y	$X_1$	$X_2$	$X_3$	$X_4$
Y	1				
$X_1$	0,694600779	1			
$X_2$	0,986158078	0,742160898	1		
$X_3$	0,733681506	0,790585557	0,632628038	1	
$X_4$	0,712455227	0,72804432	0,81287124	0,792088743	1

Source: Author's development.

According to the results of Table 3, net profit of the enterprises of the "Uztukimachiliksanoat" association is strong (0,986158078) with the time span and the remaining factors are respectively  $r_{Y,X_1} = 0,695$ ,  $r_{Y,X_3} = 0,734$  and  $r_{Y,X_4} = 0,713$  We build a model based on the correlation link between these factors. According to him, the equation of regression is expressed as follows::

$$Y_{\check{y}_3, \text{ аьзо}} = 16,8 + 0,211 \cdot X_1 + 0,917 \cdot X_2 - 0,53 \cdot X_3 + 0,022 \cdot X_4 \quad (11)$$

Here: Y - net profit of enterprises;  $X_1$  - volume of investments into enterprises;  $X_2$  - Benefits of businesses before they pay profits;  $X_3$  - operating costs of enterprises;  $X_4$  is the starting value of fixed assets.

Considering the model (11), the increase in the value of investments to the member enterprises of the "Uztukimachiliksanoat" Association by 10 per cent, the profit before income tax and the cost of fixed assets

increased by 2.1 per cent, 9.2 per cent and 0 respectively, Which leads to an additional 22 percent increase. It should be noted that during the research period, it was determined that the companies included in the association had overdue expenses, while increasing the cost of 10 units would lead to a 5.3% decline in net profit. It is desirable to provide businesses with economical and alternative energy.

(11) - the reliability and relevance of the model should be checked on criteria. The control is used in the Eviews program and the result is shown in the table. Fisher criteria  $k_1 = 11$ ,  $k_2 = 7$  and  $\alpha = 0,05$  when  $F_{table} = 3,60$  and, according to the condition  $F_{account} > F_{table}$  will be. The value of the t-criterion for the distribution of Student distribution in the tables is a value of  $\alpha = 0.05$  and the number of freedom  $df = 11$   $t_{table} = 2,2010$  equality  $t_{account} > t_{table}$  since the x and y factors are correlated and dependent on all criteria (11).

**Table 4**  
**Reliability check of the regression equation of the factors affecting enterprises' pure benefits**

R-squared	0.998664	Mean dependent var	51.00000
Adjusted R-squared	0.997901	S.D. dependent var	85.97888
S.E. of regression	3.938988	Akaike info criterion	5.874062
Sum squared resid	108.6094	Schwarz criterion	6.076106
Log likelihood	-30.24437	Hannan-Quinn criter.	5.799258
F-statistic	1308.478	Durbin-Watson stat	2.012643
Prob(F-statistic)	0.000000		

Source: The author's research results

Based on the data in Table 4 and the above points, the equation (11) is equivalent to the equation. In order to assess the effectiveness of the vertical integration of the innovation process management of enterprises in the conditions of a diverse market economy, it is necessary to compare the activities of the member-states of the Association "Uztokimachiliksanoat".

$X_1$ , the cost of products (goods, work and services) -  $X_2$ , the product (goods, works and services),

as a result of the production of the enterprises of the "Uztokimachiliksanoat" Association -  $Y$  and the factors influencing it, net gains  $X_3$  and the starting value of fixed assets -  $X_4$  and depreciation of fixed assets -  $X_5$  were selected. According to the results of Table 4, the selected factors were strongly correlated with the factor factor, and multicollinearity among the factors was not observed.

**Table 5**

**Coefficient of Correlation Coefficients of the Member of the Association "Uztokimachiliksanoat" of Namangan region**

	$Y$	$X_1$	$X_2$	$X_3$	$X_4$	$X_5$
$Y$	1					
$X_1$	0,933385	1				
$X_2$	0,9836894	0,7681273	1			
$X_3$	0,9693652	0,7472270	0,6935444	1		
$X_4$	0,9422892	0,780038	0,7812438	0,7762072	1	
$X_5$	0,9166932	0,7804460	0,670197	0,5661216	0,7926793	1

Source: the author's note based on the data from the State Statistics Committee of the Republic of Uzbekistan

On the basis of the correlation coefficients,  $Y = f(x)$  is defined by the functional dependence of the regression equation of the volume of production of the enterprises of the "Uztokimachiliksanoat" Association in Namangan region:

$$Y_{\text{Нам.аьзо}} = 24,4 + 0,87 \cdot X_1 - 0,35 \cdot X_2 + 0,63 \cdot X_3 + 0,45 \cdot X_4 - 0,3 \cdot X_5 \quad (12)$$

Here:  $Y$  - production capacity of enterprises;

$X_1$  - Number of organizations in the Association;

$X_2$  - cost of sold goods (goods, works and services);

$X_3$  - net proceeds from sales (goods, works and services);

$X_4$  - the starting value of fixed assets;

$X_5$  - depreciation of fixed assets.

According to the model (12), according to the model, the volume of output made up 10 units of the total number of member-enterprises, the net proceeds from the sale of goods and the cost of fixed assets - 8.7; 6.3 and 4.5 units have been added. It is desirable now to develop measures to reduce the prime cost of the goods (goods, works and services) sold at these enterprises and the depreciation of fixed assets. This is due to the fact that an increase in the cost of goods sold at a per cent (goods, works and services) will result in a 0.35% reduction in the volume of goods and 0.3% due to depreciation of fixed assets. (12) - the reliability and accuracy of the model are given in Table 6 below.

**Table 6**

**Reliability criteria of the regression equation of the enterprises of the "Uztokimachiliksanoat" association of Namangan region**

R-squared	0.996353	Mean dependent var	106.4250
Adjusted R-squared	0.993313	S.D. dependent var	46.00613
S.E. of regression	3.762068	Akaike info criterion	8.794668
Sum squared resid	84.91895	Schwarz criterion	9.037121
Log likelihood	-28.76801	Hannan-Quinn criter.	8.704903
F-statistic	327.8036	Durbin-Watson stat	1.947515
Prob(F-statistic)	0.000000		

Source: Author's development



According to table data (12), you can see the dependability of the model. The value of the t-criterion for the distribution of Student distribution in the tables is a value of  $\alpha = 0.05$  and  $df = 11$  for the number of degrees of freedom  $t_{table} = 2,20$  e,  $t_{X_1} = 2,79$ ,  $t_{X_3} = 5,38$  and  $t_{X_4} = 2,33$  because of the equality of x and y factors are correlated. However, we use the criteria of determining the quality of the prognostication model, the significance of the equation defined by  $t_{X_1} = -0,43$ ,  $t_{X_3} = -1,82$  and  $t_{X_5} = -3,15$ .

According to him,  $MAPE = 1.935465\%$  and  $TIC = 0.011549$ , because of the t-criterion of the distribution of Student distribution  $X_1$ ,  $X_3$  and  $X_5$ , also expressed in regression equation, will ensure a clear change in the size of the productive capacity of the members of the Association "Uztokimiyatsanoat".

It is desirable for the enterprises of the Uztakimachiliksanoat Association to attract the enterprises operating in the region to increase the volume of production, and currently there are 18 enterprises in the association. If you look at the results of the survey, 201.6 billion will be invested in 201.6 billion dollars. It could produce up to 12 products (actually 18 in 2017). It should be noted that, according to the volume of production made in 2016, the number of the members of the association is within the limits of 12 <18 <23. The profitability of the members of the Association is 11.1 per cent, which is 4,1 per cent more than the profitability of non-member associations.

According to the cost analysis of the products sold at the Association's enterprises, the limit was 167.3 <Quantitative <270.0, and the actual value of the product sold in 2017 amounted to 201.6 billion soums. soums. If these indicators were compared to the volume of products compared to the members and non-member associations, the cost of the unit product was 0.01 and 0.014 per cent, respectively. In science and practice, it is of utmost importance to create a methodology and model for the product to be used in production.

### Discussion

Vertical integration for modern businesses is a promising aspect of increasing its efficiency in a constantly changing environment in line with the vertical integration principle. This integrated approach, based on the technological principle, allows the local industry enterprises to solve important tasks for all members at the stage of final product sales, centralize marketing and legal services, provide consulting

services in tax and entrepreneurship, and targeted use of bank loans - increasing competitiveness.

According to the results of the econometric analysis developed by the author, in Namangan region, 3277 billion soums of non-member enterprises' It was found that the volume of production of the sum amounted to 447 units, while the number of enterprises reached 330. According to the results of the research, the lower and upper limit of the enterprises is between 330 and 447 <841, which is explained by the low profitability of many enterprises (7.0% for the base period).

It is also worth noting that the cost of products sold at these enterprises has increased (actually 4569 billion soums in 2017) 1950 <4569 <5287 The inequality has shown that the cost of the product has reached the upper limit, and measures should be taken to reduce production costs. To do this, it is desirable to set up enterprises with cost-effective new techniques and technologies and to launch innovative activities.

In order to increase the volume of production in the enterprises of Uztokimspirtsanoat Association in the region it is expedient to involve enterprises operating in the association, and currently there are 18 operating companies in the Association. If you look at the results of the research, 201,6 billion dollars will be invested in 2017. It could produce up to 12 products (actually 18 in 2017). It should be noted that, according to the volume of production created in 2017, the number of member companies is within the range of 12 to 18 <23. The profitability of the members of the Association is 11.1 per cent, which is 4,1 per cent more than the profitability of non-member associations.

In sum, modernization of enterprises in the conditions of globalization and improvement of vertical integration with higher organizations will help to improve the efficiency of enterprises and increase the effectiveness of innovation activities.

### Theoretical implications

The scientific value of the research is that the developed scientific proposals include improving the efficiency of management and innovation in industrial enterprises, the development of technologically new advanced techniques, as well as identifying the problems of increasing the efficiency of vertical integrated industrial enterprises on the basis of

innovation activities, and vertical integration can be used to implement a modern, appropriate approach.

An important problem is the study of its external and internal mechanisms in introducing a vertical integrated management approach. Particularly, their composition and classification would be a scientific and methodological guide to companies. The internal mechanism of the vertical integrated management ensures effective organization of economic relations between its divisions, the participation of its members as a full legal entity in the activities of the company, and the full receipt of dividends.

### Practical implications

The practical significance of the results of the research will be used to enhance the efficiency and development of light industry enterprises, to establish innovative activities of enterprises, to formulate and forecast the prospective production organization program. Recommendations for the establishment of vertical integration in production can be used to identify industry-led businesses and identify targeted programs that can enhance their capacity and capabilities.

In addition, it is necessary to study the peculiarities of increasing efficiency and development of light industry enterprises, as well as identifying adopted decisions and targeted programs for the effective organization and capacity building of industrial enterprises on the basis of the development of innovative activities of enterprises, the prospective program of production organization and forecasting available.

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