

## FACTORS INCREASING THE POTENTIAL OF THE INDUSTRIAL SECTORS

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**Abstract:** This scientific work analyzes the potential of existing industrial sectors in the regions and the factors influencing its growth. As a result of the study, an improved version of the Cobb-Douglas model for the Samarkand region was developed.

**Keywords:** industry, correlation analysis, Cobb-Douglas, potential, regression, system.

### INTRODUCTION

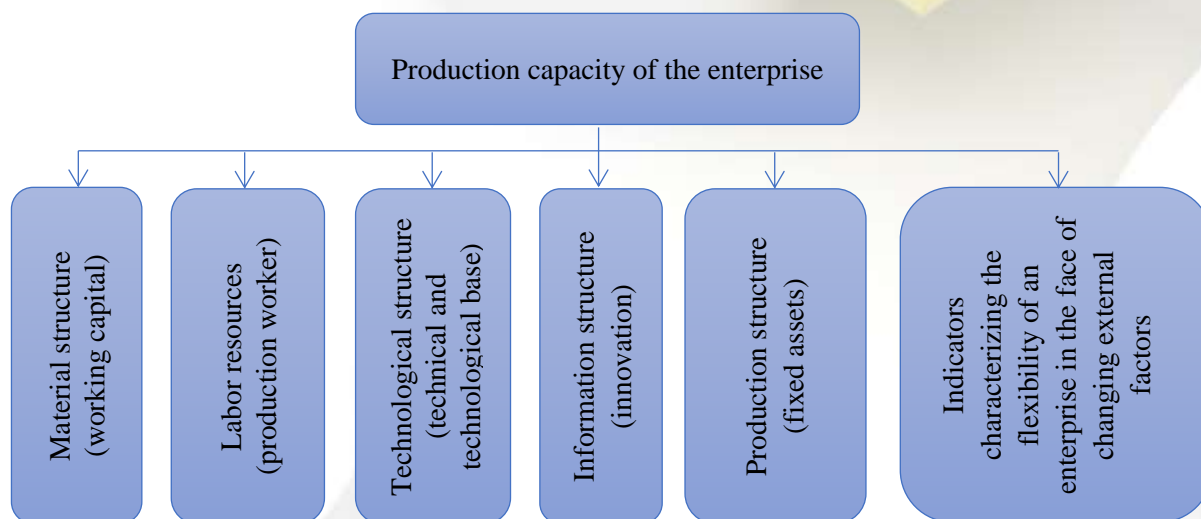
The term "potential" comes from the Latin word "potentia", which means power. However, there is no single generally accepted definition of this concept. The concept of "potential" refers to the sum of all possible levels of capability, and the word "potential" is used differently for different concepts.

"Economic potential" is understood as the degree to which society is provided with material and human resources, the possibilities for their use still exist, and are assessed by these opportunities [2].

E. S. Zambrzhitskaya and A. V. Logacheva approach the structure of production potential from the point of view of the enterprise and express it as follows (Fig. 1).

The structure of the production potential of industrial enterprises [3]

Figure 1.



From this we can conclude that the core of the production potential is the concept of production. In turn, the potential also reflects the degree of provision of the industrial sector or industrial enterprises with factors of production.

The production potential of the region is formed in the process of interaction between natural and labor resources, fixed capital and scientific and technological development, and in this regard, fixed assets are of particular importance. One of the general indicators of production capacity is the cost of fixed assets.

Analysis and studies show that the role of exports is important in the development of the industry. This is due to the fact that in order to improve the standard of living of the population of each country, it is necessary to export more products and import less [4].

## RESEARCH AND RESULTS

Therefore, it is advisable to include the share of industrial products in exports as one of the main factors influencing the production of industrial products. Therefore, it is advisable to improve the production model based on the inclusion of this factor in the Cobb-Douglas model.

$$Q = A \cdot K^{\alpha} \cdot L^{\beta} \cdot QE^{\gamma} \quad (1)$$

Here:  $Q$  - volume of industrial products;

$K$  - the volume of investment in industry;

$L$  - the number of people employed in the industry;

$QE$  - the share of industrial products in exports;

$A, \alpha, \beta, \gamma$  - unknown parameters of the model.

According to the analysis, in 2020, industrial products worth 18072.8 billion soums were produced in the region, of which 268.7 million US dollars were exported. It is important to note that in 2020, compared to 2010, the volume of industrial production of the region increased by almost 9 times, and the export of industrial products - by 2.2 times, which averaged 75.2% of the total export volume over these years. . In addition, in 2020, the network employed 171.1 thousand people, which increased from 2010 to 2020 by an average of more than 2.4 thousand people per year. In addition, in 2020, 5820.4 billion soums were invested in the industry of the region, which is 23.1 times more than in 2010.

Dynamics of key socio-economic indicators of industry in Samarkand region [5]

Years	Volume of industrial products, billion soums	Volume of investments in industry, billion soums	Number of people employed in industry, thousand	Share of industrial products in regional exports, %
2010	2 011,2	252,6	144,5	70,9
2011	2 485,6	319,8	148,1	72,6
2012	3 222,0	388,7	151,9	77,1
2013	3 880,1	493,5	155,9	63,8
2014	4 966,4	379,1	159,6	76,3
2015	6 095,5	550,2	163,2	77,0
2016	7 446,0	1 043,0	167,3	78,1
2017	9 242,0	762,0	171,4	80,3
2018	13 488,1	1 803,9	173,7	72,1
2019	15 783,6	1 290,1	168,2	78,6
2020	18 072,8	5 820,4	171,1	80,2

A correlation analysis was performed on the indicators presented in Table 1 (Table 2).

Table 2

Results of correlation analysis

	$Q$	$K$	$L$	$QE$
$Q$	1	0,79087472	0,837255802	0,491183834
$K$	0,79087472	1	0,537913067	0,371928045
$L$	0,837255802	0,537913067	1	0,512291848
$QE$	0,491183834	0,371928045	0,512291848	1

According to the results of the correlation analysis, it was found that the relationship between the indicators included in the model is in a normal state.

Using the above analysis and data, an improved version of the Cobb-Douglas model was developed and the model was evaluated based on the evaluation criteria.

$$Q = 1,21364 \cdot K^{0,3242} \cdot L^{7,0763} \cdot QE^{0,6185}$$

( $R^2 = 0,95637314$ ;  $F = 51,1505446$ ;  $S = 0,18707242$ )

According to the proposed model, the largest influencer among the main industrial products in the region was labor resources, and the second largest influencer was the share of manufactured goods in exports.

In general, the instrument that has the greatest impact on the economic development of production potential is the productivity (COP) of production factors.

In 2020, the effectiveness of investments in the industrial sector of the region amounted to 3.11 billion soums, i.e. 1 billion soums of investments accounted for 3.11 billion soums of industrial production. The effectiveness of this factor is approximately 2.9 times higher than the average efficiency for 2010-2020. In 2020, and the efficiency of fixed assets in industry is 3.38 billion soums, the efficiency of this factor is approximately 1.8 times higher than the average efficiency for 2010-2020 has decreased by half. However, in 2020, the productivity of labor resources employed in the industrial sector of the region amounted to 105.63 billion soums, and in 2020, labor productivity in industry increased by almost 2.2 times compared to the average for 2010-2020.

Considering that the above factors are a key factor in industrial production, the impact of these factors on the productivity of industrial production can be expressed as follows using a Cobb-Douglas type model (2) and a multivariate regression model (3).

$$Q_1 = A \cdot KS^\alpha \cdot MU^\beta \cdot AVS^\gamma \quad (2)$$

$$Q_2 = A + \alpha KS + \beta MU + \gamma AVS \quad (3)$$

Here:  $Q_{1,2}$  - volume of industrial products;

$KS$  - efficiency of investments in industry;

$MU$  - labor productivity in industry;

$AVS$  - efficiency of fixed assets in industry;

$A, \alpha, \beta, \gamma$  - unknown parameters of the model.

Using the data in Table 1, Cobb-Douglas and multivariate regression models were built, and structured models were evaluated.

$$Q_1 = 115,357 \cdot KS^{-0,01532} \cdot MU^{1,07133} \cdot AVS^{0,060877}$$

( $R^2 = 0,99$ ;  $F = 6234,63$ ;  $S = 0,017$ )

$$Q_2 = -448,075 - 31,742KS + 173,595MU + 66,126AVS$$

( $R^2 = 0,99$ ;  $F = 21032,301$ ;  $S = 70,401$ )

Industrial production was calculated from structured models, and the results of the analysis showed that the Cobb-Douglas model has a high similarity with the actual indicator, i.e. the standard error is lower than that of the regression model.

Based on the results of econometric modeling of the impact of factor productivity on the industrial output of the region, it was found that the highest impact factor is labor productivity, and the negative impact factor is the efficiency of investments in this industry.

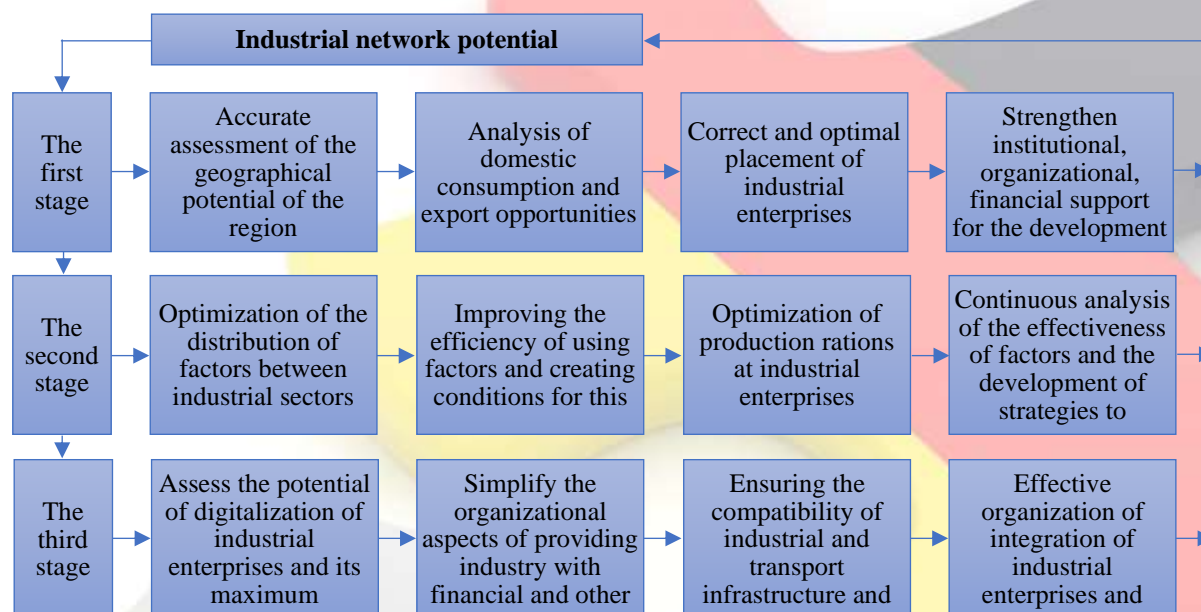
This can be explained by the negative impact of the efficiency of investments in industry on the volume of industrial production.

In recent years, there has been a sharp increase in investment in the regional industry. In particular, in 2020, 5820.4 billion soums of investments were directed to the industry. This figure is 4.5 times higher than in 2019 and 23.04 times higher than in 2010. However, the volume of industrial production in 2020 increased 1.1 times compared to 2019 and 8.9 times compared to 2010. This shows that from 2010 to 2020, investment performance has declined sharply.

## CONCLUSION

Based on the analysis, we propose the following implementation system, dividing the ways of further building the capacity of the industrial sector into three stages.





### Three-stage system of increasing the capacity of the industrial sector

The advantages of the proposed system are that at the first stage of building the capacity of the industrial sector: correct assessment of the geographical potential of the region, analysis of domestic consumption and export opportunities, correct and optimal placement of industrial enterprises, strengthening institutional, organizational, financial support; At the second stage, optimization of the distribution of factors between industries, strengthening and creating conditions for their effective use, optimization of production rations at industrial enterprises, continuous analysis of factor efficiency and development of a strategy for its increase; At the third stage, the assessment of the digitalization potential of industrial enterprises and its maximum implementation, simplification of the organizational aspects of providing industry with financial and other resources and lowering interest rates on loans, ensuring the compatibility of production and transport infrastructure and reducing fuel costs, Effective integration of industrial enterprises and research institutions, in a word, it is characterized by comprehensive coverage.

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