

**Манба ва фойдаланилган адабиётлар руйхати:**

1. Ўзбекистон Республикаси Президентининг 2021 йил 28 июлдаги “Уzumчиликни ривожлантиришда кластер тизимини жорий этиш, соҳага илғор технологияларни жалб қилишни давлат томонидан қўллаб-қувватлашнинг қўшимча чора-тадбирлари тўғрисида”ги ПҚ-5200-сонли қарори.
2. Ўзбекистон қишлоқ ва сув хўжалиги. 11-сон. 2019. 38-бет. [http://qxjournal.uz/ld/4/443\\_1-38.pdf](http://qxjournal.uz/ld/4/443_1-38.pdf)
3. Романова К.М. Средиземноморские субрегиональные реалии лингвокультурной сферы «Виноделие»: на материале итальянского, испанского и французского языков: дис. канд. филологических наук: 10.02.20. / Романова Ксения Михайловна; Уральский гос. пед. ун-т. – Екатеринбург, 2008. – 222 с.
4. Қобуснома. – Т.: Истиқлол, 1994 йил. 51-бет.
5. Портер М. Международная конкуренция. – М.: Международные отношения, 1993. С. 51.
6. Enright M. Regional Clusters and Economic Development: A Research Agenda, in Staber U., Schaefer N. and Sharma B. (Eds.) “Business Networks: Prospects for Regional Development, Berlin”: Walter de Gruyter, pp. 190- 213.
7. Маршалл А. Принципы экономической науки. Т. I–III. Пер. с англ. – М.: Издательская группа «Прогресс», 1993.
8. Безаттин П. – Becattini G. From Marshalls to the Italian «Industrial Districts. [www.competitiveness.org](http://www.competitiveness.org). 2015
9. Kogut B., Zander U. Knowledge of the firm and evolutionary theory of the multinational corporation. // Journal of International Business Studies. 1993. 24 (4), 625-645.
10. Bruun P., Bennett D. Transfer of technology to China: a Scandinavian and European perspective. European Management Journal February. 2002. 20 (1), 98-106.
11. Lin B.-W. Technology transfer as technological learning: a source of competitive advantage for firms with limited R&D resources. R&D Management. 2003, 33 (3), 327-341.
12. Звягин А.С. О прохождении дикого и культурного винограда. / А.С.Звягин, Л.П.Трошин. // Труды Кубанского государственного аграрного университета. 2010. № 25.
13. Эргашев Э.И. Иқтисодиётни эркинлаштириш шароитида боғдорчилик ва узумчилик тармоғини ривожлантиришнинг асосий йўналишлари. Иқт. фан. ном. илм. дар. олиш учун ёзилган дисс. автореф. – Т., 2009 й. 22-бет.
14. Мухитдинова У.С. Иқтисодиётни модернизациялаш шароитида мева-сабзавотчилик маҳсулотлари бозорини ривожлантириш йўналишлари. Иқт. фан. док. илм. дар. олиш учун ёзилган дис. автореф. – Т., 2010. – 36 б.
15. Porter M.E. The Competitive Advantage of Nations. – London: Free Press, 1990.
16. Marshall A. Principles of Economics. London, Basingstoke: Macmillan and Co., Ltd., 1920.
17. Hotelling H. Stability in Competition. // The Economic Journal. 1929. Vol. 39. No 153. Pp. 41–57.
18. “Ўзшаробсаноат” АЖ йиллик ҳисоботлари асосида муаллиф томонидан тузилган.



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**SANOAT KORXONALARINING ISHLAB CHIQARISH  
INFRAUZILMALARIDA YUZAGA KELADIGAN MUAMMOLARNING  
SINERGETIK TA'SIRINI BAHOLASH**

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**Annotatsiya.** Maqolada infratuzilmalar va ulrning ahamiyati ochib berilgan. Infratuzilmalarning o'zaro bog'liq aloqalari nazariyalari o'rganilgan. Sinergetik ta'sir ko'lami va kuchini aniqlash maqsadida infratuzilma tarmoqlaridagi aloqalar tasniflangan. Sinergiya va sinergiya ta'sirini yuzaga chiqaruvchi o'zaro bog'liq aloqa turlari aniqlangan. Ishlab chiqarish infratuzilmasidagi muammolar natijasida yuzaga keladigan sinergik ta'sirlarni aniqlash uchun sinergiya metodologiyasidan foydalanilgan. O'zbekiston Respublikasining ishlab chiqarish tarmoqlarida yuzaga keladigan muammolarning sinergetik ta'siri sinergiya metodologiyasi asosida baholangan.

**Kalit so'zlar:** infratuzilma, sinergiya, infratuzilma tarkibi, sinergiya metodologiyasi, infratuzilma obyektlari, ishlab chiqarish, sinergetik ta'sir.

**ASSESSMENT OF THE SYNERGIC EFFECT OF THE PROBLEMS ARISING IN THE PRODUCTION  
INFRASTRUCTURES OF INDUSTRIAL ENTERPRISES**

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**Abstract.** The article explains the importance of infrastructure. Theories of interconnected infrastructure have been studied. In order to determine the scale and strength of the synergistic effect, the connections in the infrastructure networks are classified. The types of interrelationships that create the synergy and the synergy effect have been identified. The synergistic methodology was used to identify synergistic effects resulting from problems in production infrastructure. The synergistic impact of emerging problems in the manufacturing sector of the Republic of Uzbekistan was assessed on the basis of the synergistic methodology.

**Keywords:** infrastructure, synergy, infrastructure structure, synergetic methodology, infrastructure facilities, production, synergetic impact.

ОЦЕНКА СИНЕРГЕТИЧЕСКОГО ВОЗДЕЙСТВИЯ ПРОБЛЕМ, ВОЗНИКАЮЩИХ В  
ПРОИЗВОДСТВЕННЫХ ИНФРАСТРУКТУРАХ ПРОМЫШЛЕННЫХ ПРЕДПРИЯТИЙ

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**Аннотация.** В статье объясняется важность инфраструктуры. Изучены теории взаимосвязанной инфраструктуры. Для определения масштаба и силы синергетического эффекта проведена классификация связей в инфраструктурных сетях. Выявлены типы взаимосвязей, создающих синергию и синергетический эффект. Методология синергия использовалась для выявления синергетических эффектов, возникающих в результате проблем в производственной инфраструктуре. Синергетическое влияние возникающих проблем в производственном секторе Республики Узбекистан оценивалось на основе методологии синергии.

**Ключевые слова:** инфраструктура, синергия, инфраструктурная структура, методология синергия, объекты инфраструктуры, производство, синергетическое воздействие.

**Introduction.** Production infrastructure is a complex system, and its failure (in whole or in part) has a significant impact on national interests, including the country's economy and the basic needs of the population. The production infrastructure is also a certain system, representing the main elements in the organization of production and their interrelationships. A system consists of certain parts, and failure of one part affects the whole system.

For the study of production infrastructures, it is important to develop systematic approaches based on cross sectoral assessment and the study of the relationships between individual infrastructure sectors. In recent years, rapid development of social and production infrastructure in the Republic of Uzbekistan, creation of a favorable investment environment for business entities, support of economic sectors and the social sphere, as well as construction of new infrastructure facilities on the basis of public-private partnership, on this basis, ensuring employment of the population and their standard of living Systematic reforms are being implemented for further improvement. In this regard, the decision PQ-4936 of the President of the Republic of Uzbekistan dated December 28, 2020 "On measures to develop the social and production infrastructure of the Republic of Uzbekistan in 2021-2023" and PQ-98 dated January 22, 2022 "On measures to develop the social and production infrastructure of the Republic of Uzbekistan in 2022-2024 The decision "On measures to develop the social and production infrastructure of the Republic" was signed.

As priority directions, "a total of 76.8 trillion soums will be allocated for the development of infrastructure objects, including 23.8 trillion soums in 2022, the largest amount will be allocated to social sectors (5.9 trillion soums), defense bodies and the closed part (4.5 trillion soums), construction of important facilities (3.9 trillion soums), road transport infrastructure (2.7 trillion soums). These situations require an understanding of the problems arising in the structure of the production infra-

structure and an assessment of their synergistic effects.

**Literature Review.** Proportionate development of infrastructure is required for the economic development of any country. However, infrastructures around the world are threatened by a wide spectrum of constantly interacting anthropogenic and natural hazards [1]. Not only large, but also small threats can adversely affect the failure and proportional development of an infrastructure component or function. Even if such effects seem unlikely, failure to assess the effects can make their resulting problems unsolvable. Such impacts can often lead to economic losses, increase the level of poverty of the population, and affect the economic development of the affected area.

In particular, D.J. Sumant considered the concept of efficiency as the rational use of labor, capital, land, materials, energy and information resources for the production of various types of goods and services [2].

L.H. Amato and H.A. Christi studied the relationship between the growth of total factor productivity and the growth of exports and imports in 1977-1992. They say that the increase in imports has a positive effect on the total number of productivity factors [3].

Also, as noted by Altomonte, the penetration of imports into the economy of the enterprise has a positive effect on the efficiency of the enterprise [4].

I. Jajri and I. Rahmah studied the effect of technical progress on the productivity of small and medium-sized industrial workers in Malaysia between 1984 and 2005. According to them, the development of technical progress has a positive effect on the production process and causes an increase in the labor productivity of workers [5].

Also, R. N. Joshi and Singh conducted research on general productivity factors of garment industry in India during 2003-2007. Several factors affecting the productivity of the textile and garment industry have been studied and analyzed by them. According to them, working conditions created for workers,

labor productivity, the share of foreign capital affect the level of competitiveness of the industry [6].

Alvarez and Sebastian conducted a study in 1990-2000 using an econometric modeling approach to determine the impact of Chinese products on the manufacturing industry in developing countries. They claim that the penetration of Chinese products will have a negative effect on the growth of employment indicators of the enterprise and increase the probability of bankruptcy of the processing industry [7].

Grosskopf "In an inefficient production process, productivity growth is the change in efficiency that represents changes in technology and the marginal product is the effect of the shift of the output function. He argued that since productivity growth can be affected by changes in productivity and changes in technology, productivity gains can be achieved by improving the capacity of human resources to optimize the effective use of technology, improving productivity and replacing old technologies with newer ones [8].

M. I. Kiron notes that "Productivity" and "Production" are two different terms. According to him, productivity is a relative term and indicates the ratio between the total output and the total output used in it, on the other hand, output is an absolute concept and refers to the volume of output. Production may increase, but productivity may decrease due to inefficient use of the resource. Efficient use of production resources can increase productivity, but production volume does not increase. Production refers to the final result of a production system, while productivity reflects its efficiency [9].

**Research methodology.** The research uses the synergy methodology to identify synergistic effects resulting from problems in production infrastructure. The theoretical basis of the methodology is the concept of asymmetric operational influence, in particular, it is used to determine the importance of interconnected sectors, sub-sectors or elements of the production infrastructure. In this case, the importance of small production infrastructure sectors is directly proportional to the activity and passivity of other sectors. The synergy methodology consists of five steps:

1. Identification of production infrastructure networks.
2. Interdependence of production infrastructure networks (correlation) analysis.
3. Determining the importance of production infrastructure sectors.
4. Impact assessment.
5. Determination of synergistic effect.

Production of the geographical region detection stage a list of all infrastructure sectors to be assessed is drawn up. This phase also determines the maximum number of infrastructures to be considered in the region. In the inventory, infrastruc-

ture networks should be more fully covered. Infrastructure networks differ significantly in regions with different geographic characteristics [10]. For example, according to the annex of the 2008 Council of Europe Directive [11] only sub-sectors are defined for the energy and transport sectors.

Thus, it is necessary to form a list of small main production sectors for a geographical region, country or group of countries. In the second stage-between sub-sectors of the infrastructure system interactions are evaluated. This study is recommended to use the KARS method [12]. It is mainly used for quantitative risk analysis based on risk correlation. The KARS method is an analysis method consisting of components such as connecting, analyzing, and setting limits[13] infrastructure networks.

The next step is to determine the interconnection of infrastructure networks. Correlations are assessed using pairwise comparisons comparing the significance of two selected sub-sectors. The more important sub-sector is selected from each pair [14].

At the third stage, activity activity and passivity hidden in each branch of the production infrastructure are identified. In particular, K of Si network A Si activity coefficient Si represents the full potential of the network for failure of other networks.

**Analysis and discussion of results (main part).** The synergy methodology is used to determine the synergistic effect of a problem in several sectors of the production infrastructure in Uzbekistan. There is no specific list of production infrastructure in the Republic of Uzbekistan. However, the social and production infrastructure has been systematized by the decision of the President of the Republic of Uzbekistan dated January 22, 2022 PQ-98 "On measures to develop the social and production infrastructure of the Republic of Uzbekistan in 2022-2024". Based on this decision, we distinguish the following social and production infrastructures. As mentioned above, the synergy methodology applies only to production infrastructure networks. The first step of the methodology is to identify important sub-sectors. the results of this step. The second stage of production infrastructures aimed at analysis. Correlations are evaluated using production infrastructure comparisons, and a correlation matrix is formed based on the influence of each sector on other sectors. In the formation of this correlation matrix, values are assigned based on the influence of networks on each other based on the following conditions. The correlation matrix is compiled using the software system of Ahmad Naim and Ayman Qahmash, who developed the software system according to the synergy methodology.

In this software system, a list of production infrastructure networks is entered and the pattern

of interactions is evaluated based on the following criteria. Signs to identify relationships:  $V \rightarrow$  a row variable affects the corresponding column variable;  $A \rightarrow$  column variable is affected by the corresponding row variable;  $X \rightarrow$  row and corresponding column variable affect each other;  $O \rightarrow$  row and corresponding column variable have no relationship; shows the interaction matrix of production infrastructure sectors of the Republic of Uzbekistan.

Based on the matrix, a disruption in the electricity network leads to a disruption of the water supply (V), the electricity supply is related to the gas supply, and if there is no gas supply, the electricity supply stops (A), because most of the thermal power plants in the Republic of Uzbekistan are obtained from gas fuel. The emergence of environmental problems leads to power outages, and on the contrary, efficient use of the electric power system reduces environmental risks (X). The power grids are not highly correlated with the irrigation system and their interaction is not noticeable (O).

The next step is to divide into segments based on the degree of dependence. However, since the selected object is production infrastructure, in the analysis, all elements are combined in one segment, that is, segment III. Therefore, it is concluded that a problem in one network has an impact on all networks. The total network impact (Ri) of each production network was determined using equation (6). To do this, the importance of each sub-sector in the infrastructure of the Republic of Uzbekistan was calculated using equation (5). The identified results are in given. The fifth and final step of the synergy methodology is to determine how a problem in a particular network affects other networks. A particular problem encountered in manufacturing infrastructure is the synergistic effect of failures of other networks due to interconnectedness. Since in our study, only production data were obtained, all are related to each other. For example, power outages cause problems in all industries.

The impact of the power grid on the production infrastructure is 10 percent, and in this case, all infrastructure facilities will suffer some degree of inefficiency. In particular, the problem of energy supply affects the water supply at the same time. It is known from the results that due to the problem that occurred in the Electricity, the production infrastructure will be damaged at the same time by 109.72 %.

**Conclusions and suggestions.** Based on the results of the research, infrastructure is the socially important networks and their relationships that are important for the continuous provision of the coun-

try's national security, economy and basic social needs. Infrastructural systems always have some kind of disruption. At this time, calculating the total losses and the financial losses caused by the problem in this network has always been a problematic situation. The proposed methodological approach can be used to calculate the overall synergistic effect of a problem in a certain infrastructure network and to forecast total losses. The identification of synergistic effects due to problems in the production infrastructure is of high importance in making decisions within the framework of the country and the network on the protection of infrastructure facilities. The presented synergy methodology provides not only production infrastructures, but also opportunities to calculate the impact of social infrastructure on the country's economy. The application of this methodology to the production infrastructure of the Republic of Uzbekistan demonstrates its intuitive appeal and usefulness and provides opportunities for use in the management of production networks.

Based on the above studied information and analysis, as well as foreign experiences, it is appropriate to implement the following measures to increase the efficiency of industrial enterprises in our country.

1. The variability of the selected capital density has a positive effect on production efficiency, it is possible to increase the production capacity of enterprises by improving capital, that is, by using modern production technologies, by correctly assessing the factors affecting the production process.

2. Along with the introduction of modern production technologies into the production process, continuous improvement of the qualifications of workers, formation of skills for working with modern production technologies, and creation of favorable working conditions for them will increase production efficiency.

3. The increase in the number of the population causes an increase in the demand for the products of the textile industry, which causes an increase in the demand for energy by enterprises. Therefore, it is possible to expand the use of alternative energy sources and thereby maintain and increase the efficiency of the enterprise.

4. All-round economic and legal support of textile industry producers by the government and improvement and introduction of benefits in order will lead to the development of this sector and the increase in the number of production enterprises, which will provide employment to the population.

*List of used literature:*

1. World Economic Forum, *Global Risks 2014, Ninth Edition, Geneva, Switzerland, 2014.*
2. Sumanth D.J. *Implementation Steps for a Productivity Measurement Programs in Companies. IIE Conf. Proc.*

3. Amato L.H. and Christie H.A. *The Effect of Global Competition on Total Factor Productivity in U.S. Manufacturing. Review of Industrial Organization*. 2001. 19: 407-423. Avenzora A. *Analisis Produktivitas dan Efisiensi Industri Tekstil dan Produk Tekstil di Indonesia Tahun 2002-2004*.
4. Altomonte C., Alessandro B. and Armando R. *Import Penetration, Intermediate Inputs and Productivity: Evidence from Italian Firm. Working Paper: Dynreg 2008*.
5. Jajri I. and Rahmah I. *Technical Progress and Labour Productivity in Small and Medium Scale Industry in Malaysia. // European Journal of Economics, Finance and Administrative Sciences – Issue 15. Euro Journal, Inc., 2009, pp. 199-208*.
6. Joshi R.N. and Singh. *Estimation of Total Factor Productivity in The Indian Garmen Industry. // Journal of Fashion Marketing and Management Vol. 14, No. 1, 2010, pp. 145-160*.
7. Alvarez R. and Sebastian C. *David Versus Goliath: The Impact of Chinese Competition on Developing Countries. Working Papers Central Bank of Chile 478, Central Bank of Chile*.
8. Grosskopf S. *Efficiency and Productivity, in Fried, H.O., C.A.K. Lovell and S.S. Schmidt (Eds.), The Measurement of Productive Efficiency: Techniques and Applications, Oxford University Press, New York, 1993, 160-194*.
9. Kiron M.I. *Factors Influencing Productivity in Textile Industry*.
10. Бахромов А.А. *Вызовы и перспективы управления развитием технологии искусственного интеллекта в Узбекистане. // Colloquium-journal, 2022, (6 (129)), 33-37*.
11. Бахромов А. *Совершенствование методов анализа влияния использования цифровых технологий на экономический рост промышленных предприятий. Engineering Problems and Innovations, 2023, 1 (1), 54–60. Извлечено от: <https://fer-teach.uz/index.php/epai/article/view/36>*
12. Бахромов А. *Значение и направления развития цифровой экономики на промышленных предприятиях. Engineering Problems and Innovations. 2023. Извлечено от: <https://fer-teach.uz/index.php/epai/article/view/134>*
13. Baxromov A.A. *Financial security in the textile industry to increase the economic efficiency of industrial enterprises. // Nazariy va amaliy tadqiqotlar xalqaro jurnali, 2023, 3 (2), 27-37. doi: 10.5281/zenodo.7699499*
14. Baxromov A.A. *Directions of increasing product competitiveness in industrial enterprises. // Talqin va tadqiqotlar ilmiy-uslubiy jurnali, 2023, 1 (18), 123-127*.



O‘ZBEKISTON RESPUBLIKASIDA KIMYO SANOATI VA O‘G‘IT ISHLAB  
CHIQRISHNI BAHOLASH

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**Annotatsiya.** Ushbu maqolada O‘zbekiston kimyo sanoatini baholash va tahlil qilish o‘rganilib, respublika kimyo sanoati rivojlanishiga to‘sqinlik qilayotgan asosiy muammolar va omillar aniqlangan. O‘g‘itlar va umuman, kimyo mahsulotlarini ishlab chiqarish va qayta ishlash tahlil qilinadi.

**Kalit so‘zlar:** kimyo sanoati, ishlab chiqarishning texnik holati, tarkibiy o‘zgarishlar, modernizatsiya, kimyoviy moddalar, o‘g‘itlar, tahlillar, global kimyoviy moddalar, strategiya.

ОЦЕНКА ХИМИЧЕСКОЙ ПРОМЫШЛЕННОСТИ И ПРОИЗВОДСТВА УДОБРЕНИЙ В  
РЕСПУБЛИКЕ УЗБЕКИСТАН

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**Аннотация.** В данной статье рассматривается оценка и анализ химической промышленности Узбекистана, выявлены основные проблемы и факторы, сдерживающие развитие химической промышленности республики. Проанализировано производство и переработка удобрений и химической продукции в целом.

**Ключевые слова:** химическая промышленность, техническое состояние производства, структурные преобразования, модернизация, химия, удобрения, аналитика, глобальная химия, стратегия.

ASSESSMENT OF THE CHEMICAL INDUSTRY AND FERTILIZER PRODUCTION  
IN THE REPUBLIC OF UZBEKISTAN

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**Annotation.** This article examines the assessment and analysis of the chemical industry of Uzbekistan, identifies the main problems and factors hindering the development of the chemical industry of the republic. The production and processing of fertilizers and chemical products in general is analyzed.

**Keywords:** chemical industry, technical condition of production, structural transformations, modernization, chemicals, fertilizers, analytics, global chemicals, strategy.