

## Impact Factor:

ISRA (India) = 6.317  
ISI (Dubai, UAE) = 1.582  
GIF (Australia) = 0.564  
JIF = 1.500

SIS (USA) = 0.912  
ПИИИ (Russia) = 3.939  
ESJI (KZ) = 9.035  
SJIF (Morocco) = 7.184

ICV (Poland) = 6.630  
PIF (India) = 1.940  
IBI (India) = 4.260  
OAJI (USA) = 0.350

SOI: [1.1/TAS](#) DOI: [10.15863/TAS](#)

### International Scientific Journal Theoretical & Applied Science

p-ISSN: 2308-4944 (print) e-ISSN: 2409-0085 (online)

Year: 2021 Issue: 12 Volume: 104

Published: 16.12.2021 <http://T-Science.org>

QR – Issue



QR – Article



**Erkin Ganiev**

Jizzakh state pedagogical institute  
Candidate of economic science, Associate Professor

**Alisher Rahmatov**

Jizzakh state pedagogical institute  
teacher

The Republic of Uzbekistan  
[alisherraxmatov0@gmail.com](mailto:alisherraxmatov0@gmail.com)

## IMPROVING THE INSTITUTIONS OF THE CONTINUING EDUCATION SYSTEM AND AN ECONOMICAL MATHEMATICAL MODEL OF OPTIMAL PLACEMENT

**Abstract:** This paper makes analyses of the improving the institutions of the continuing education system and an economical mathematical model of optimal placement. On this case, research has been pinpointed on the state educational standards, professional educational institutions and general technique of licensing. Moreover, paper investigates some issues of the improvement model of regional vocational education. Therefore, example of the Jizzakh of the Republic of Uzbekistan and mathematical model of the regional system of vocational education have been learned as the whole.

**Key words:** improved model, pedagogical education, vocational education, mathematical modeling systems, regional educational system.

**Language:** English

**Citation:** Ganiev, E., & Rahmatov, A. (2021). Improving the institutions of the continuing education system and an economical mathematical model of optimal placement. *ISJ Theoretical & Applied Science*, 12 (104), 587-589.

**Soi:** <http://s-o-i.org/1.1/TAS-12-104-64> **Doi:**  <https://dx.doi.org/10.15863/TAS.2021.12.104.64>

**Scopus ASCC:** 3300.

### Introduction

**Information:** For years of independence, the national education system and training become one of state policy pricing questions in republic.

At present, a set of optimal models is widely used in the development and optimal placement of the national economy. At the same time, due to the identification of optimal options using a set of optimal models used in solving network problems, problem solving is achieving high results. In turn, the optimal structure of enterprises, transport issues are important in the optimal options of transportation, reducing the cost of production, the regulation of capital costs.

One such issue is the improvement of institutions of this system of continuing education and their optimal placement in the regions in accordance with the specialties.

It is important to determine the solution using general economic mathematical models in the improvement of institutions of continuing education and their optimal placement.

In creating an economic mathematical model of the problem, attention is paid to the mathematical support in the exact calculation of problems, in which it is necessary to create a system of algorithms, determine the logical solution of the problem, formulate an information account, organize the computational process.

Thus, according to the methodological and mathematical support, it will be possible to develop a single model of improving the system of continuing education and the optimal placement of institutions.

The issue of improving the system of continuing education and the optimal placement of institutions is considered as a matter of dynamic production

**Impact Factor:**

ISRA (India) = 6.317  
 ISI (Dubai, UAE) = 1.582  
 GIF (Australia) = 0.564  
 JIF = 1.500

SIS (USA) = 0.912  
 ПИИИ (Russia) = 3.939  
 ESJI (KZ) = 9.035  
 SJIF (Morocco) = 7.184

ICV (Poland) = 6.630  
 PIF (India) = 1.940  
 IBI (India) = 4.260  
 OAJI (USA) = 0.350

transport of the entire programming. Because the main condition of the issue is the cost of education, the economic development of the region, the optimal location of institutions, enterprises and their transportation costs. The most important situation in the context of the issue is the volume of construction, the cost of movement, the capacity of the institution, in which building materials, regional raw materials, labor resources are the main ones. These are basically of two types:

- global - complex as a whole,
- local - a separate district, territorial educational institution.

Thus, the optimal criterion of the objective function of the problem of improving the system of continuing education and the optimal placement of educational institutions is to ensure the minimum level of total costs. This means building modern educational institutions at the lowest cost and further improving the education system.

We now introduce the following definitions for a single model model of the problem of improving the system of continuing education.

- s, s'-indicators of educational institutions;
- r, r'- indicator of economic regions;
- indicators of existing and existing educational institutions in l, l'-settlements;
- t-planned t period
- Index of sets of networks in the S-system
- C<sup>r</sup> - index of a set of professional colleges;
- R- indicator of S-type educational institutions to be built in the region;

Lsr-r is an indicator of S-type educational institutions built in the settlement l- located in the region;

Indication of improvement of S-type educational institutions built in Nsl-l settlement;

A set of indicators in the T-plan;

Asrlv (t) -r-matrix determining the location of the S-type educational institution in the v-variant specialty, built in the l-settlement located in the region;

Matsrlv- (t) -r-matrix determining the cost of viewing the S-type educational institution to be built in the settlement l-population located in the region in the v-variant of the specialty;

Y S (t) - a matrix that determines the cost of the state budget for construction;

Q<sup>r</sup> srlv (t) - a matrix that determines the cost of the state budget for the construction of educational institutions;

==srlv (t) - a matrix that determines the cost of construction of educational institutions with the help of small and medium businesses, sponsors and foreign investment;

Fsrlv (t) -r-matrix defining the limits of funds allocated from the state budget for s-type educational institutions to be built in the region;

A matrix defining the limits of funds allocated from the local budget and sponsors for s-type educational institutions to be built in the l-settlement located in the Fsrllv-r-region;

lsrlv is a unit vector representing the value of each of the s, r, l, v-indicators.

Dsrl (t) is a vector representing additional efforts to improve the S-type educational institution to be built in the l-settlement located in the region;

g (t) - a vector representing the limit of the funds allocated by the state for the improvement of the education system;

g<sup>S</sup>(t)-S – vector representing the limit of funds allocated for the improvement of institutions of the type education system;

r (t) -r - a vector representing the limits of funds allocated for the improvement of educational institutions in the region;

f sr (t) is a vector representing the limits of funds allocated for s-type educational institutions under construction in the r-region;

F<sup>r</sup> sr (t) is a matrix defining the limits of funds allocated for the improvement of a s-type educational institution to be built in the settlement l located in the r-region;

The values sought in the problem are expressed as follows.

zsr<sup>r</sup>l (t) - to be built in the l-settlement located in the r-region

s-educational institution, r'- vector representing the number of students who intend to attend the s'- educational institution to be built in the e-settlement located in the area;

usr (t) - r- vector representing the capacity of admission of students to the s-type educational institution under construction in the region;

Xsr (t) is the vector representing the students studying in the s-type educational institution in the r-region;

$$\bar{Y} sr = \{ \bar{Y} sr (t), \bar{X} sr (t) \}$$

xsr<sup>r</sup>l (t) -r- vector representing the equipment of the S-type educational institution built in the L-settlement located in the region on the basis of modern educational technologies in the v-specialty; dsrlv-integer value, calculated that y can be 0 or 1.

$$\sum_{r=1}^R \sum_{l=1}^L Z^{s'r}(t) > \bar{Y}^{s'r}(t) \quad (t=1, \bar{T}) \quad (1)$$

(s=1, S)  
(r'=1, R)

$$\sum_{r=1}^R \sum_{l=1}^L \Theta^{s(l)} Z_{s'r} > \bar{X}_{sr}(t) \quad (t=1, \bar{T}) \quad (2)$$

(S=, S)  
(r'=1, R)

**Impact Factor:**

<b>ISRA (India)</b> = <b>6.317</b>	<b>SIS (USA)</b> = <b>0.912</b>	<b>ICV (Poland)</b> = <b>6.630</b>
<b>ISI (Dubai, UAE)</b> = <b>1.582</b>	<b>ПИИИ (Russia)</b> = <b>3.939</b>	<b>PIF (India)</b> = <b>1.940</b>
<b>GIF (Australia)</b> = <b>0.564</b>	<b>ESJI (KZ)</b> = <b>9.035</b>	<b>IBI (India)</b> = <b>4.260</b>
<b>JIF</b> = <b>1.500</b>	<b>SJIF (Morocco)</b> = <b>7.184</b>	<b>OAJI (USA)</b> = <b>0.350</b>

$$\sum_{l=1}^{lsr} \sum_{s'=1}^S \sum_{r'=1}^R Z_{s'r'l}(t) \leq D(t) \quad \begin{matrix} (S=\bar{S}) \\ (Z=1, \bar{R}_s) \\ (T=1, \bar{T}) \end{matrix}$$

$$\sum_{s'=1}^S \sum_{r'=1}^R \sum_{s'r'l}^{srt} (t) \leq \sum_{v=1}^{Nslsr} A^{srlv}(t) \xi^{srlv}(t) \quad (4) \quad \begin{matrix} s=1, \bar{S} \\ r=1, R \\ l=1, ls2 \end{matrix}$$

$$\sum_{s=1}^S \sum_{r=1}^R \sum_{l=1}^{slrslr} Z_{s'r'l}(t) \leq \sum_{v=1}^{N's'l'sr} \bar{A}^{s'r'l'v}(t) \xi^{s'r'l'v}(t) \quad (5) \quad \begin{matrix} s'=1, \bar{S} \\ r'=1, R \\ l=1, ls'r' \\ T=1, T \end{matrix}$$

$$\sum_{s=1}^S \sum_{r=1}^R \sum_{l=1}^{lsrNsr} G^{srlv}(t) \leq q(t) \quad (t=1, \bar{T}) \quad (6)$$

$$\sum_{s=1}^R \sum_{l=1}^{lsr} \sum_{v=1}^{Nsr} \bar{G}^{srlv}(t) \leq \xi^{srlv}(t) \leq \bar{q}(t) \quad t=1, T \quad (7) \quad s=1, \bar{S}$$

$$\sum_{s=1}^S \sum_{l=1}^{lsr} \sum_{v=1}^{Nsr} \bar{G}^{srlv}(t) \xi^{srlv}(t) \quad (t) \leq \bar{q}(t) \quad t=1, T \quad (8) \quad R=1, R$$

The vector-matrix economic-mathematical model of the problem of optimal placement of

institutions in the areas of improvement of the system of continuing education is characterized as follows.

**References:**

- Astafeva, N.E. (n.d.). *regional the concert of devolment of continuous pedagogical education "Formation in region"*. Scientifically-methodical magazine.
- Katmonko, L.Y. (2006). *Regional system of continuous pedagogical education*. formation Economy in system of social coordinates: the collection of materials of regional scientifically-practical conference. (pp.162-165). Tambov: Publishing house.
- Makhmedov, G.I., & Ganiev, E. (2004). *Mathematical modeling, Accommodation and perfection of Regional and professional educational establishment on the bases if multistage system*. (pp.65-66). Korea: Yeungman University deaeg. 2004, June 2-4.
- Ganiev, B. (2012). Optimal placing of a network of comprehensive schools of region. *Pedagogical Sciences*, №3.
- Ganiev, E. (2018). Mathematical modeling of the regional system of professional education of the republic of Uzbekistan. *Abusage 3 journal*.
- Ganiev, E. (2019). Formation of preschool educational institutions and their mechanisms of modeling. *Theoretical and applied science journal*, UZ.
- Ganiev, E. (2019). Prospects of perfection of managerial process by vocational training system. *Colloquium - journal*, №3 (27).
- Ganiev, E., & Ablakimova, R. (2019). *Modeling systems on strengthening of educational preparation 57*. February 1-2st 2019. Moscow of REV after G.Y. Plekhanov.
- Ganiev, E. (2019, February 25-26). Mathematical education of the republic of Uzbekistan. *International correspondence scientific journal European education and technology*".
- Jurayev, R., & Ganiev, E. (2012). Mathematical modeling, accommodations and perfection of regional and professional educational establishment. *The advanced science open journal*, Moscow.
- Ganiev, E. (2004). *Using the modern information technologies. The manual*. - "Fanand texnologiya". (p.58). Tashkent.