The Study of Effective Factors on the Optimum Use of Educational Space and the Presentation of an Applied Model in Technical and Vocational Factories

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Abstract: With regard to the significance of optimum application of space especially educational Factorial ones and with regard to the fact that there has never been such a research in this province and also for determining a model for improving factorial space, the above research has been conducted in factories of organization of technical and vocational education in Golestan province in 2006. This research is descriptive and for improving space taking advantages the linear programming model has been used and also for getting target function coefficients and limitations, exact observations and distributed questionnaire has been used among 118 persons of managers, educators and experts of the factories of the technical and vocational education and industrial organization of the province. The foundations of above research are mathematic model specified in four groups for similar factories. The obtained results of the acquired models have showed that the designed models in this research causes improving of space.

Keywords: Educational space • Model • Linear programming • Optimum

INTRODUCTION

Most of organizations specially educational organizations comes across lack of space that, most is due to false use of space. Improving and suitable allocating of spaces are one of the important problems of programming in optimum use of the space of educational and productive centers too. It seems that today, most of managers of these centers in order to accelerate in doing affairs and job congestion prevention should research about location and space of doing activities [1].

Because the factories such as light, air conditioning, cold, heat, equipment setting, library, internet to being available and flexible are effective in optimum use of space [2] that true use lead sharp decrease in expenses [3]. Many researches have ever done for improving space but in organization of technical and vocational education from Golestan province any research hasn’t been done to for improving space. If we don’t apply suitable methods improve space this organization will come across crease operation in factories. So, it is obvious that imprisoning learners in boring and inflexible space such as class or factory can’t guide this organization to ward desired goals neither in the education view nor in the training view [4].

The improvements done for space in organizations have ever been with directive different methods and the improvement of space by mathematical models has been used. The question is that what is the effect of every stated factors on the optimum use and which model can we show for it? This research shows methods for increasing use coefficient from educational space in technical and vocational education factories in Golestan province. This methods have been devised by linear programming model with determining decision variables (effective factors on improving space) and target function for every factories and their limitations and it allows to managers to study analysis sensitivity and parametric programming [5]. The acquired model has been examined by QSB software.

MATERIALS AND METHODS

The research done is are a kind of descriptive and for obtaining target function coefficients in linear programming experts, managers and trainers in technical and vocational centers from Golestan provinces (the turning factories of metals, welding with electricity, general plumbing, industrial plumbing, welding with gas and carpentry) have been used their number were 20 persons and also managers of industries and operational experts and headquarter industrial centers in Golestan province (managers, 420 persons,
Sampling Method: In this research for selecting sample persons, coincidental sampling method has been used and statistical society base don and such variable as kind of job and or organizational position (employee, expert, managers and educator). Has been classified the results of using this method are as follows firstly, distribution of sample in all classes of society is suitable. Secondly, general properties should of society ware recognized. Thirdly, properties and variable in each class be taken in to account.

On the basis of approximate evaluation formula, the sample volume was choice of all industrial managers and experts totally 96 persons for damaged ratio plus 6 persons of managers and 16 persons of educator of metal turning factories, plumbing with electricity, general plumbing, industrial plumbing of technical and vocational centers from Golestan province was increased to our sample persons, totally the number of the sample persons has been determined.

In this research for getting the final model for the purpose of each factory, firstly the planned questions at 4 groups have been classified as follows:

**The First Group Model:** The questions related to the equipment set in factories.

**The Second Group Model:** The question related to the use of cold, hot means and light.

The third group the questions about the existence of library and internet in factories.

The fourth group the questions related to the existence of ware houses in factories.

For each factory, target function has been modeless to as in shown in figure.

For finding target function coefficients (Cj) was used the questionnaire consisting of 6 general questions and 53 special ones the special questions of this questionnaire have been obtained from research questions and the responsive determined the effect of effective factors on increasing improvement from coefficient educational space in 5 alternatives such as very much, much, middle, little, very little, this factors consisted of met rage of factories, light, cold and hot equipments, existence of library and internet, existence of ware house end the equipment setting inside factories.

For determining numerical quantity each of target function coefficient has been influenced for each answers, (very much 5, much 4, middle 3, little 2, very little 1) and the average of the optimum answers were regarded as each coefficients in target function and also, with regard to standard and the exact observations limitation was determined.

The functions of research in the mentioned 4 groups have been modeled as the following:

**The First Group Model**

**Purpose:** To increase the use of educational space through kind of set (arrangement).

\[
X_j \quad \text{Decision variable}
\]

\[
C_j \quad \text{Target function coefficient}
\]

\[
\text{Max } z_1 = \sum_{j=1}^{4} C_j x_j
\]

The technique of programming integer number has been used

\[
J_1 = \text{Production process}
\]

\[
J_2 = \text{Kind of production or service}
\]

\[
J_3 = \text{Fixed position}
\]

\[
J_4 = \text{Cellular}
\]

**The Second Group Model**

**Purpose:** To increase improvement of the education of space by use of cold, hot means and light.

\[
\text{Max } z_2 = \sum_{j=5}^{6} C_j x_j
\]

\[
J_5 = \text{Light}
\]

\[
J_6 = \text{Cold, hot}
\]

s.to

\[
20 \leq x_5 \leq 28
\]

\[
150 \leq x_6 \leq 30
\]

limitation of temperature

limitation of light

**The Third Group Model**

**Purpose:** To increase the optimum use of library and internet.

\[
\text{Max } z_3 = \sum_{j=7}^{8} C_j x_j
\]

\[
J_7 = \text{Library}
\]

\[
J_8 = \text{Internet}
\]
Applicable programming technical of true number.

The Forth Group Model

Purpose: To increase optimum use of ware houses the target function differs from limitations of this group since the ware house of factories studied has been grouped and factories that are different have placed in one group.

The groups have been considered as following:

The First Group: General plumbing factories, industrial plumbing.

The Second Group: Welding with gas factories, welding with electricity, turning.

The Third Group: A carpentry factory

The target function and general limitations of this group have been modeled as the following

Max $Z = \sum_{i,j} C_{ij} X_{ij}$

$X_{i,j} \leq 2$

REFERENCES