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Optimize the educational strategies of Kowsar Hospital (The role of applied mathematics in strategic management)

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Abstract
Mathematical science plays an important and important role in solving organizational problems and phenomena. Research in the operation is a very important branch of applied mathematics to solve organizational and strategic organizational issues. One of the applications of research knowledge in operations in organizations is the optimal selection of organizational strategies.The present study aimed to determine the optimal educational strategy in Koohar hospital in Boroujerd. This research is a survey research. The statistical population of the nurses was Kourosh Boroujerd Hospital and a statistical sample of 20 people was analyzed using simple random sampling. To collect information, a field questionnaire was used. In order to analyze the information obtained in this research, after extraction of raw data, descriptive and inferential sections were analyzed. Taxonomy is the main method of data analysis. The indicators were first measured and then these weights were utilized using Taxonomy method to determine and determine the optimal educational strategy of Koohar Borujerd Hospital. The results showed that self-taught education in the final grade and direct education and apprenticeship teacher training are ranked first and second respectively (priority) respectively and are introduced as the best method in the field of education.
Keywords: Applied Mathematics, Strategic Management, Taxonomy, Educational Strategies

Introduction
In the complex world of today, the survival and survival of organizations depends on the balance between human resource development, methods and technologies in organizations, and adaptation to over-organizational changes and innovations . Therefore, most developed countries of the world recognize the importance of human resources as part of critical and strategic resources and productive assets, andin order to strengthen its knowledge, skills and abilities, it prepares and implements various programs . Training and upgrading of employees as an organizational strategic action, if done correctly, comprehensively and fully, at the individual level, makes a person valuable and at the organizational level, it improves the

organization and at the national level leads to the promotion of human characteristics, behavioral, and functional of development and productivity (Abbas Zadeh et al., 2007, p. 52). The ultimate goal of any educational system is to train staff for more and better Efficiency and effectiveness (Jabbari, 2002, p. 3). The purpose of this study was to investigate and explain the optimal educational strategy in Koohar Hospital in Boroujerd.

Literature and research background

The changes that came in the shadow of inventions, innovations and innovations have had a dramatic effect on various aspects of life, and in the between organizations as institutions of social origin were inevitably bound up with these developments. In this way, organizational structures evolved from simple and traditional forms to complex and specialized forms, and their tasks and functions evolved and became complex.In such a situation, preparing for a certain profession requires a lot of time and specialized training, and thus the training of employees gradually finds a special place in most occupations(Rohi et al., 2016, p. 23).

One of the most important service organizations The provider health care and the general health of our community are hospitals, With professional bureaucratic structures, With bureaucratic professional structures, A team of skilled human resources specializes in providing specialized, clinical and nursing services to our clients.Such organizations are similar to other organizationsIn order to reduce the decline and recession of human resources and promotion of professional knowledge and connectivity to environmental improvements in order to take advantage of the expanding knowledge and new medical techniques,Have recognized the importance and necessity of training nurses and health care providers and established their organizational education system in order to empower human resources (Wikinson and Mires, 2000, from the Qalaei, 2013, p. 202).

Achieving the goals of the organization depends on the ability of employees to perform their duties and adapt to changing environments. Implementation of training and upgrading of human resources makes it possible for individuals to adapt to organizational and environmental changes, Effectively continue their activities and increase their efficiency. Therefore, training and upgrading is a continuous and planned effort by management to improve the competency levels of employees and organizational performance (Qalaei, 2013, p. 118). Training all efforts and efforts to improve the level of knowledge and awareness, Technical skills and professional and career, and also to create the desired behavior in the staff of an organization in order to prepare them for their duties and responsibilities (Matani, Hasanzadeh, 2008, p. 72).

Training is a set of needs assessment and planning activities to improve the knowledge, skills, attitudes and behaviors of the organization's members to perform specific tasks assigned to the organization. Learning as a continuous and effective use of knowledge and skills acquired during the course Education is defined as one's job. (Afzal Khani and Najibat, 2014, p. 79). Identification of educational needs is the first step in the planning of staff training and the need for an effective educational program. (Aminzadeh, 2011, p. 202). Educational needs are the desirable changes in the individual or individuals of an organization of the knowledge, skills or behavior of a person so that the person or persons can fulfill their duties and responsibilities in relation to their job in a desirable, acceptable and consistent with working standards, whenever possible, provide the areas of employee growth and excellence in a variety of ways. (Abtahi, 2005: 24-23; quoted by Malayee Harandi, 2011).

Table 1. Studies done in relation to education (quoted by Jozebshi, 2016)

Researchers	Studies done
Khorasani et al., 2015	Research done shows that only about 40 percent of employee training is transferred to the workplace immediately after training, and after 6 months this amount is reduced to 25 percent and, after one year, is reduced to 15 percent.
Schneider,2014	Despite the high costs of ongoing organizational training, only about 10 percent of German companies use efficiency measures and efficiency.
Weldy,2009	According to recent estimates, about 80% to 90% of investment in education is wasted, and only 10% of annual investment leads to learning outcomes and performance improvements.
Stephens & Dailey, 2015	Organizations, using information technology and modern educational methods, try to develop the educational content of their employees.
Salas et al., 2006	The important thing about providing training is that Comprehensive and integrated system should provide organizational training; Because efficient training can lead to more productivity, higher quality of work, increased motivation and commitment, excellent morale and teamwork, less error and peak more Benefit competition.
Grossman & Salas, 2011	The presence of employees with little training can lead to errors, injuries, Thatthey are all very costly.

Qalaei (2013), A study by title on Surveythe effectiveness straining courses in service of nurses'in health care centers affiliated to Social Security Organization (case study: AlliNasab Hospitals and 29 Bahman hospitals in Tabriz).The findings of this study indicate that lackneed and proper of measurement of miscalculation leads to a lack of overlapping of educational programs with the educational needs of nurses and reduces the effectiveness of educational courses. But in cases where the program is consistent with the educational needs of nurses, there needs correspondence with educational content and increased effectiveness.

Zarei et al. (2011) Research titledStudying the educational needs of medical records department staff in Khuzestan province hospitals in the year 90.The results of this study showed that with the development of health information computer systems, the educational needs of medical records staff have changed in the past, and staff of the medical records department need to upgrade their skills in using computers and information technology in medical records.

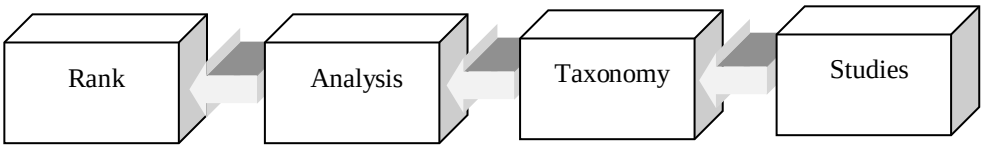
Mohammadi and Dadkhah (2004) in their research entitled "Assessing the process of continuing education in terms of nursing personnel working in Ardabil hospitals" The results showed that 56.5% of the status of presentation in retraining the average evaluated.8 . 59% of nurses stated that their educational needs were not evaluated before conferences. 4.75% of nurses stated that new nursing books were not available in the hospital and 2.55% of them assessed the training by a specialist. Therefore, there is a need to review the issue and the way

in which continuing education is conducted and the need for continuous assessment of retraining. In order to achieve on success in a very complicated and competitive conditions, Firms must to develop their strategies correctly.In addition to the correct formulation of strategies, it should be possible to select the appropriate strategy in each situation and in any environment (Farzipoor Saen & Azadi, 2009). Be attention tothe importance of strategic planning in organizations, managers are trying to identify and select the best and most effective strategies by considering different factors. Thissubject helps managers to have a long-term vision of the organization and to achieve its goals (Kaplan & Norton, 2008; Dodangeh, Dehafarin and Nasehifar, 2012). Farzipoor(2009) used a mathematical programming method for ranking organizational strategies.In this study, he considered the four indicators measurement, cost, risk, current net worth and return on capital as indicators of evaluation. Mohaghar et al. (2013) Using fuzzy ranking method and TOPSIS method, as model for ranking organizational strategies.

Lo & Tzeng(2011) using the network analysis method, Demateland Vicore in the fuzzy number environment, Evaluate the organizational strategies of an active company in the electronics industry. In today's competitive environment, formulating and choosing the right strategies is one of the important challenges facing organizations to create competitive advantage(Heidari Dehui et al., 2016).

Methodology of research

This study is a survey research.The statistical population of the nurses was Kourosh Boroujerd Hospital and a statistical sample of 10 people was analyzed by simple random sampling method.In order to collect information, Field studyand questionnaire tools were used.To analyze the data obtained in this research, after extraction of raw data, analyzing the data was analyzed in two sections: descriptive and inferential.Taxonomy is the main method of data analysis.At first, indicators were measured and then these weights were utilized using Tapsis method to determine and determine the optimal educational strategy of nurses of Koohar Hospital in Boroujerd.



Figer 1. The path to research development

4. Data analysis method

In order to analyze the data obtained in this research, after extraction of raw data, analyzing the data was analyzed in two sections: descriptive and inferential. Multi criteria Decision Analysis (MCDA) or multi-criteria decision making (MCDM) is a cross-sectional and extended branch of research in operations. That to design mathematical and computational tools, To support the subjective evaluation, there are a limited number of decision optionswhich is bound to be a finite number of performance criteria and is determined by one or a groupis related. MCDA / MCDM utilizes From the knowledge of many fieldsuch as

mathematics, behavioral decision making theory, economics, computer technology, software engineering, and information systems. Since the 1960s, MCDA / MCDM has been active research field and many theoretical and practical articles and many books have been produced in this field. MCDA / MCDM methods to select a superior option,Grouping options in a few groupsor sorting options are designed with a mental arrangement (Behzadian et al., 2012).

A major problem in evolutionary computing is the comparison of algorithms. Usually, algorithms run multiple benchmarks many times. Then, the results are analyzed by statistical hypotheses. Statistical tests can identify whether there are differences between the workings of the algorithms. The problem is, if there are differences, which of the algorithms is the best? Using statistical tests in this stage, it is necessary to make two to two Comparisons between the algorithms. Obviously, the number of tests required increases with the number of analyzed algorithms. This is a problematic way, firstly because of the task of comparing each pair of algorithms, and secondly, and more importantly, the likelihood of mistakes is high (Krohling & Pacheco, 2015).

Taxonomy analysis method

Step One: Creating a Data Matrix
Step Two: Formulate a Standard Matrix
Stage Three: Formation of Distance Matrix
Step Four: Determine the shortest distances
Step Five: Ranking homogeneous activities in terms of criteria
Step 6: Calculate the degree of enjoyment of homogeneous activities

Research Findings

Coefficient of importance of indicators

The following questionnaire is designed to determine the coefficient of importance of indicators .

Table 2. Indicator Importance Index (Final Weight Criteria: Wj)

Wj	*Index*
0.20	**Learning**
0.22	**Solving problems**
0.18	**Reduce costs**
0.19	**Access to the professor**
0.21	**Productivity Performance**

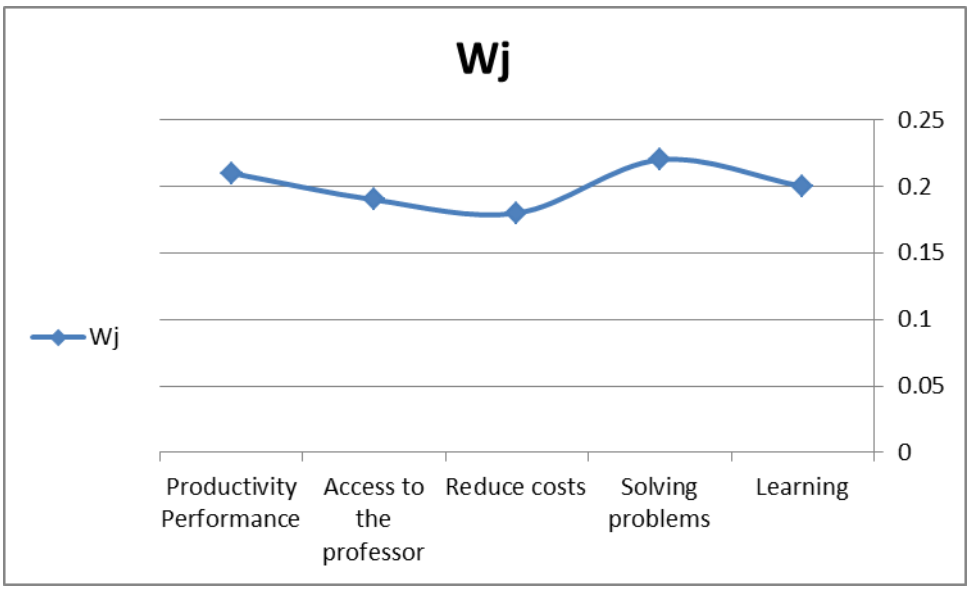


Chart 2. Indicator Importance Index (Final Weight Criteria: Wj)

According to the study and analysis of the data obtained in this study, problem solving and productivity performance are ranked as the most important indicators in the ranking .

The process of Taxonomy analysis

Taxonomy was used to analyze the data.

Introductory Stage: **Decision matrix**: The decision matrix contains 5 options and 6 criteria, which are set on the bipolar spectrum from 0 to 9 .

Table 3. Decision matrix

Index / Education	Learning	Solving problems	Reduce costs	Access to the professor	Productivity Performance
Electroniclearning	2.6	3.6	6.4	3.4	5
Direct training	7.6	6.6	5.6	8.2	6.8
TrainingStudent Teacher	8.2	7.4	2.4	8.2	7.5
Training through resources	6.6	4.8	4.2	2.8	7.2
Learning through video conferencing	4.4	5	8.1	5.6	5

Self-study Educate	4.4	3.9	7	2.2	3.8

Registration of decision matrix data in Taxonomy software

Table 4. Decision matrixin Taxonomy software

Education	Data				
Electronic learning	2.6	3.6	6.4	3.4	5
Direct training	7.6	6.6	5.6	8.2	6.8
Training Student Teacher	8.2	7.4	2.4	8.2	7.5
Training through resources	6.6	4.8	4.2	2.8	7.2
Learning through video conferencing	4.4	5	8.1	5.6	5
Self-study Educate	4.4	3.9	7	2.2	3.8

Stage One: Non-Scalable Decision Matrix

Table 5. Unscaling decision matrix

Education	Unscaling				
Electronic learning	-1.528	-1.181	0.418	-0.68	-0.65
Direct training	0.991	1.01	-0.009	1.278	0.674
Training Student Teacher	1.293	1.595	-1.717	1.278	1.189
Training through resources	0.487	-0.304	-0.756	-0.925	0.969
Learning through video conferencing	-0.621	-0.158	1.326	0.218	-0.65
Self-study Educate	-0.621	-0.962	0.739	-1.169	-1.533

Step second: Calculate the distance between options and positive ideals

Table 6. Calculate the distance between options to positive ideals

Education	distance between options to positive ideals
Electronic learning	4.869
Direct training	1.575
Training Student Teacher	3.043
Training through resources	3.673
Learning through video	3.353
Self-study Educate	4.893

Step Three: Ranking Options

Table 7. Ranking Options

Education	Ranking Options
Electronic learning	0.833
Direct training	0.27
Training Student Teacher	0.521
Training through resources	0.629
Learning through video conferencing	0.574
Self-study Educate	0.838

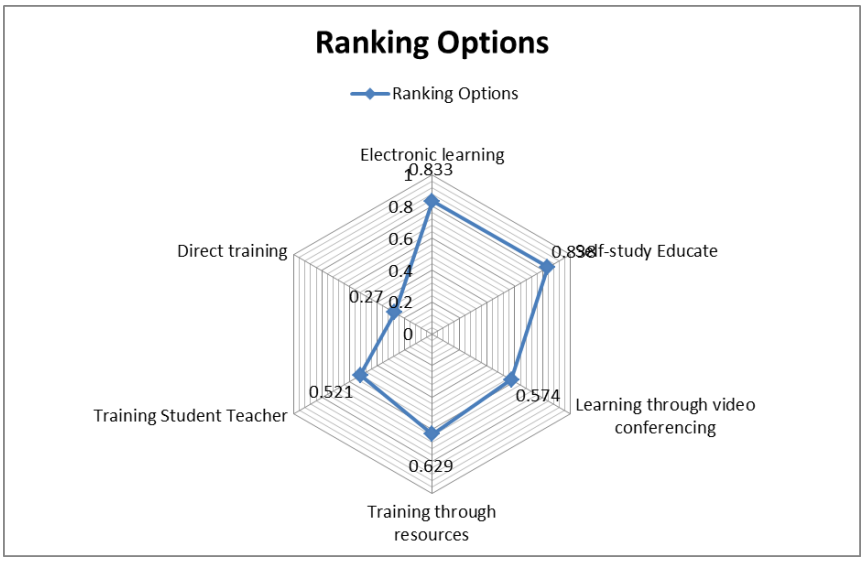


Chart 3. Ranking Options

Step Four: Final Conclusion

Table 7. Final Conclusion

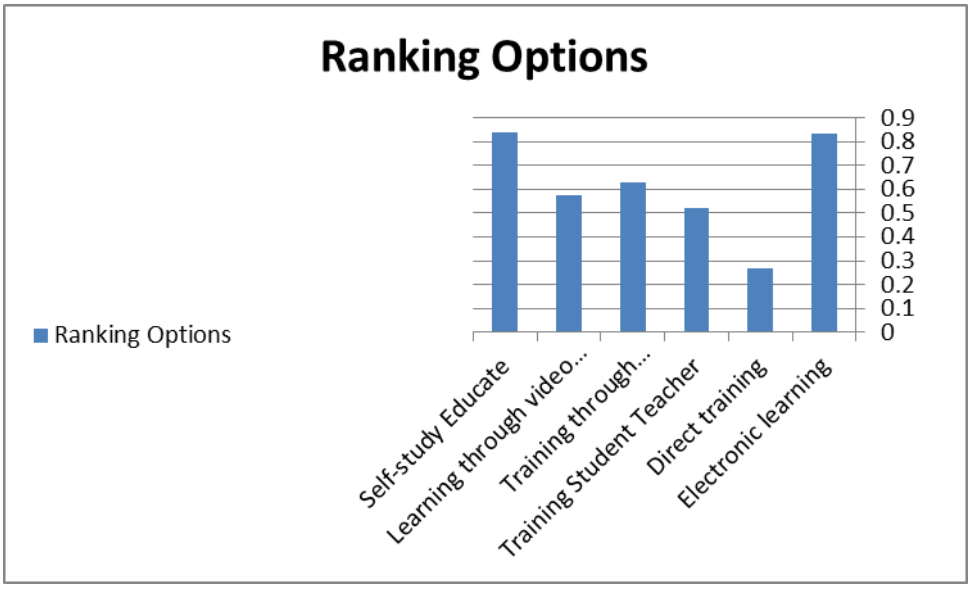


Chart 4. Final Conclusion

Regarding the study and the analysis of the data obtained in this study, Self study Educatein last place and direct teaching and Training Student Teacherare ranked first and second (priority) respectively, and as the best method in The field of education Will be introduced.

Discussion and Conclusion

Training and upgrading of human resources is considered as one of the main strategies for keeping and using human resources.Staff training is a process that provides staff adaptation and adaptability to the changing organizational environment. A very important point in planning and implementing educational programs is planning according to the needs of the audience.Mathematical science plays an important and important role in solving organizational problems and phenomena.Research in the operation is a very important branch of applied mathematics to solve organizational issues and strategic organizational. One of the applications of knowledge research in operations in organizations is the optimal selection of organizational strategies.The present study aimed to determine the optimal educational strategy in Koohr Hospital of Borujerd. Taxonomy is the main method of data analysis. At first indicators were countedthen these weights were utilized by Taxonomy method to determine and Surveythe optimal educational strategy of Koohar Borujerd Hospital. The results of the research show that the problem-solving criteria and Productivity Performance are ranked as the most important indicators in the ranking, respectively. Self-study Educateat the final level and direct education and Training Student Teacherare ranked first and second respectively (priority) respectively and are introduced as the best strategy in the field of education.

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