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Using Model of Fuzzy Decision Support Systems in Iran Khodro Company's Recruitment and Selection Systems

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Abstract. Today most companies need to employ skilled and experienced staff and they always have problems in identifying personnel. The lack of a system that is able to integrate the needs of organizations in this field was evident; Iran Khodro Company as Iran's largest car maker, always has been faced with the problem. This study is implemented in the Department of Human Resources of Iran Khodro Company for recruitment and selection. Aim of this study is introducing a model of fuzzy decision support systems that compliance with it that Iran Khodro Company will improve the selection process using it. Therefore, in this study, we intend to use existing models and experiences in organizations and offer a Decision Support Model for Selection.

Keywords: human resources, Fuzzy, TOPSYS method, Decision support system.

1. Introduction

Today, importance of human resources factor and its unique role as a strategic resource and Process Designer and executive systems, has more importance position than the past. In any organization, Humans are the most main source and property of organization [1]. The human resources are the Key and main part for success or failure of organizations. One of the fundamental concerns of human resource managers is hiring employees. Lack of right choice in selecting the people damages to the organization lots [2].

In the past, Organizations emphasized on special employment tests such as test the character, intelligence, skills, etc. In fact, the results of these tests were determining factor in selecting applicants. But the major problem of this test was Crisp Attitude in employment. According to this, approach of using fuzzy logic in human resources management has had a special place. In any fuzzy logic, correct object attribute has be shown with the value of a number between zero and one. Whatever we can move towards one, the quality of object or attribute is greater [2, 3].

2. Definition of Subject

Design Decision Support System can have an important role in the selection and hiring succeed. Initial thoughts of this study were from observed weaknesses in the employing systems [6]. The identifying criterions and factors that effect on recruitment in the context of this research, helps to increase the power of employing systems in selecting. This study tries to optimize decisions in recruitment and selection systems using of Fuzzy Decision Support System in the organization. It is necessary to say that the factors and criterions will be collected in each class through documentary study, study library, field studies and interviews with experts.

3. Population of Research and Population of Information Provider

Population of this study is composed of all managers and professionals in the Department of Human Resources of Iran Khodro. The initial statistical sample (first questionnaire) of study was chosen from human resource managers of Iran Khodro Co. at this stage, the number of selected sub-factors was adjusted. In the

second stage (second questionnaire) with judge sampling, four professional managers who have academic experts in the field of human resource management, were selected.

4. Determine Weight of the Affecting Criterions on the Selection System

The purpose of the distributing of questionnaires is determining the relative importance of factors and criterions. Thus, the questionnaire was distributed between four of the top experts in human resources of Iran Khodro. The questionnaire was designed as possible to compare pairs of factors and criterions. After collecting the questionnaires and extracting the decision matrices, it is necessary to calculate the incompatible of them [6, 8]. Results' Normalized matrix of the experts and corresponded weight vector is shown in table (2).

5. Data Analysis in Fuzzy-Topsis Model

In this study, with the Freidman test, the mitigation questionnaire was used for sub-factors of study. The fuzzy-Topsis method helped to determine priority of three Employment applicants in Iran Khodro applicant and a fuzzy decision support system program was designed using of MATLAB software [7]. After calculating weight vectors, for fuzzy-Topsis implementation, evaluation forms of three Employment applicants are filled by four experts with assisting linguistic variables in the Human Resources Department [4, 5]. (Table 3)

6. Summary

The weight of different criterions shows order of psychological, medical, and scientific knowledge, functional priorities and the appearance and behaviour factors that have been selected by experts in Human Resources Department for Employment. In this study, Output function in Sugeno model includes a linear function of input weights (a, b, c, d, e) (respectively weights of factors are), a fixed coefficient (f) and the (T, U, V, W, X) factors. (T, U, V, W, X) are medical factors, functional characteristics, behavioural and morphological characteristics, personality and psychological and scientific in order. Output function of this research is:

$$Y = 0.31T + 0.10U + 0.08V + 0.4W + 0.11X$$

For entry information to the program, in the first step, we must eradicate fuzzy from numbers. Many defuzzy methods have been developed in the past decades.

We import content of table4 as an input in the program and the results of designed program in MATLAB software is shown in Figures 1 (for person A). Based on Calculations and results of the program, person C with 8.74 values is in the first employment priority, person A with 7.53 values is in the second Priority and person B with 7.21 values in the third.

7. References

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Table1. Affecting Factors in the selection and recruitment of human resources of Iran Khodro co - extracted from the first questionnaire

affecting Factors in the selection and recruitment of human resources of Iran Khodro co.				
Medical factors	**Functional characteristics**	**Morphological and behavioral characteristics**	**Psychological personality characteristics**	scientific and knowledge Factors
Physical health Mental health	Top Skills High learning ability	attention Balancing behavior	High emotional intelligence Creative Honest Practical and hardworking	Academic records being associated with the job applicant Researchers in the spirit of applicant

Table2. Final normalized Matrix of paired comparisons for main factors of selection and the weight vector

paired comparison matrix's Average of the four managers	Medical	Functional characteristics	Behavioral and morphological characteristics	Psychological character	Scientific and knowledge	Row Geometric Mean	Normalized weights
Medical	1.00	3.94	4.16	0.64	2.63	1.94	0.31
Functional characteristics	0.25	1.00	1.19	0.22	1.19	0.60	0.10
Behavioral and morphological characteristics	0.24	0.84	1.00	0.27	0.50	0.49	0.08
Psychological character	1.57	4.47	3.66	1.00	3.56	2.47	0.40
Scientific and knowledge	0.38	0.84	2.00	0.28	1.00	0.71	0.11
Sum						6.21	1.00

Table3. Evaluation of three job applicants by four experts using of linguistic variables

The sub-criterion	selected Applicants people	Experts			
		First	Second	Third	Fourth
Physical health	A	Very good	Good	Good	Good
	B	Fair	Good	Very good	Good
	C	Very good	Very good	Very good	Very good
Psychological health	A	Good	Very good	Good	Good
	B	Good	Good	Average	Fair
	C	Good	Very good	Very good	Good
high Skills	A	Very good	Good	Good	Very good
	B	Good	Good	Very good	Good
	C	Very good	Fair	Good	Very good
High learning ability	A	Fair	Good	Very good	Fair
	Fred B	Good	Very good	Very good	Average
	C	Good	Very good	Good	Good
Politeness	A	Fair	Good	Very good	Good
	B	Very good	Very good	Very good	Very good
	C	Good	Very good	Good	Good
Balanced	A	Good	Good	Average	Fair
	B	Good	Very good	Very good	Good
	C	Very good	Good	Good	Very good
Creative	A	Good	Good	Very good	Good
	B	Very good	Fair	Good	Very good
	C	Fair	Good	Very good	Fair
High Emotional Intelligence	A	Good	Very good	Very good	Average
	B	Good	Very good	Good	Good
	C	Fair	Good	Very good	Good
Honest	A	Very good	Very good	Very good	Very good
	B	Good	Very good	Good	Good
	C	Good	Good	Average	Fair
Practical	A	Good	Very good	Very good	Good
	B	Very good	Good	Good	Very good
	C	Good	Good	Very good	Good
Researcher	A	Very good	Fair	Good	Very good
	B	Fair	Good	Very good	Fair
	C	Good	Very good	Very good	Average
Related Academic records with work	A	Good	Very good	Good	Good
	B	Good	Good	Average	Fair
	C	Good	Very good	Very good	Good

Table4. De-Fuzzy decision matrix

De-Fuzzy decision matrix	medical	Functional characteristics	Behavioral and morphological characteristics	Psychological character	Scientific knowledge
Person A	6.87	6.87	6.5	6.5	8
Person B	6.5	6.5	6.87	6.5	6.87
Person C	8	6.87	8	8	6.87

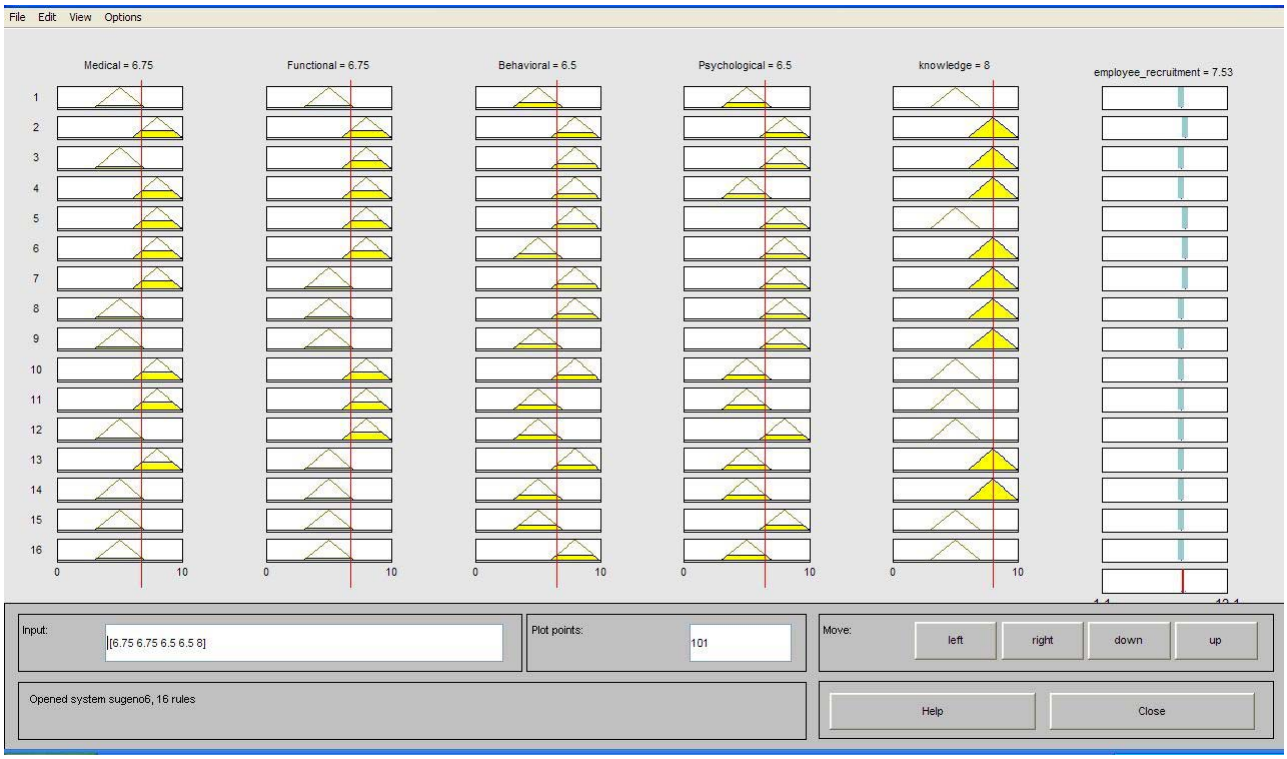

Fig1. The result of person A in program