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Providing a Fuzzy Expert System for Human Resources Strategy Formulation

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Abstract

Human resources are a key source of sustainable competitive advantage and are considered as one of the main factors for the success of organizations. Therefore, effective management of human resources has become one of the most important issues facing organizations to achieve organizational goals. Given the strategic importance of human resources, adopt appropriate strategies to manage these resources, is the main concern of senior managers. In this study with the configurational approach, a model based on Fuzzy Inference Systems (FIS) is provided for formulation of human resources strategy. Based on Dyer and Holder model inputs include contribution, composition, competence and commitment. Based on Bamberger and Meshoulam model outputs includes paternalistic, secondary, free-agent and commitment strategies. The system was designed, in RIPI was used and the results indicate that the system is valid.

Introduction

Human resources management can and should play a strategic and key role in the design and implementation of organizational transformation and transfer strategies. Although literature related to HR strategy is rich, it lacks operational and functional models for proposing strategies that are appropriate to job clusters. The present study tries to provide a fuzzy logic quantitative model for developing a suitable human resources strategy. Due to the diversity and variety of variables, we try to design and test the model in the form of an expert system.

Case study

In order to implement and test the expert system provided with empirical evidence, a study was conducted at the Research Institute of Petroleum Industry (RIPI). For this purpose, after designing a questionnaire, two homogeneous job clusters were selected to measure the desired job objectives.

Materials and Methods

The purpose of this research is applied and, in terms of data collection, is a kind of analytical-descriptive research. In order to design a fuzzy expert system for choosing a human resources management strategy, while conducting library

studies, interviewing experts, in the second phase, a few methods were used and its strategy was a case study with the aim of testing the expert system. The statistical population of the research is the academic and organizational experts of human resources management and experts in the field of strategic human resource management. Sampling method in this research is a snowball type. In the case study, in order to test the designed model, information on the jobs of the research institute of the oil industry has been studied.

In order to design a fuzzy expert system, the present study uses MATLAB software using the graphical user interface features and its fuzzy logic toolbox. We have tried to design a system that is user friendly with the user's graphical interface and can improve the flexibility and performance of the system by using the fuzzy logic toolbox. The design of the fuzzy expert system consists of the following five stages: design - Fuzzy inputs and outputs - Formulation of inference rules - defuzzy - test of model. The knowledge of determining the inputs and outputs of the system as well as the rules of deduction from the literature is obtained through library study and a survey of experts. To fuzzy, the triangular function and for the fuzzy inference, the mamdani method has been used.

Discussion and Results

Developing a human resources strategy tailored to any occupation or job cluster in organizations is one of the important factors in the success of organizations.

In general, different models and theories have been presented with different approaches for the formulation of human resource strategies.

One of these models is the strategic reference points (SRP) that are very good in today's organizations. Since most models lack a quantitative and mathematical framework for strategy formulation.

In this paper, we tried to present a model whit configurational perspective, which will show the impact of organizational goals and objectives on occupations in a comprehensive way on choosing a type of human resource strategy.

On the other hand, using fuzzy logic, this model is presented as an expert system to provide a tool for organizations that are simple and practical to determine their human resources strategy. Such a system is even applicable for identifying a strategy for any job.

Key Words: Human Resource Strategy, the strategic reference points, Fuzzy Inference System