12th International Conference on Application of Fuzzy Systems and Soft Computing, ICAFS 2016, 29-30 August 2016, Vienna, Austria

Application of fuzzy logic in job satisfaction performance problem

Serife Z. Eyupoglu[a] ,Latafat A. Gardashova[b*] , Rashad A. Allahverdiyev[c] T.Saner[d]

[a] Department of Business Administration, Near East University, P.O.Box:99138, Nicosia, North Cyprus, Mersin 10 Turkey
[b,*] Azerbaijan State Oil and Industry University , Department of Computer Engineering, Baku, Azadlyg ave. 20, AZ1009, Azerbaijan
[c] Azerbaijan State Oil and Industry University, BA Programs, Baku, Azadlyg ave. 20, AZ1009, Azerbaijan
[d] School of Tourism and Hotel Management, Near East University, P.O.Box:99138, Nicosia, North Cyprus, Mersin 10 Turkey

Abstract

Job satisfaction has been a popular topic of research for many decades. The interest in this topic has attracted psychologists, management scholars and, more recently, economists. Most of the studies conducted in the area of job satisfaction have been based on statistical methods. However these methods cannot account for the fact that basic facets of job satisfaction, such as Activity, Independence, Variety, Social status, and Supervision-human relations, to name but a few, are evaluated based on perceptions which do not provide precise numeric information. Information supported by perceptions can be processed more adequately by using fuzzy logic. In this paper we suggest fuzzy if-then rules based expert system to describe relations between job factors and overall job satisfaction.

1. Introduction

   Job satisfaction is one of the most important issues of organizational psychology[1]. The key definitions and main research studies of job satisfaction are given in the literature[2,3]. In job satisfaction is described as "the level of contentment a person feels regarding his or her job". This feeling is mainly based on an individual's perception of satisfaction. Job satisfaction can be influenced by a person's ability to complete required tasks, the level of

---

*Corresponding author. Tel.: +994505840904.
  E-mail address: latsham@yandex.ru

communication in an organization, and the way management treats employees. Job satisfaction falls into two levels: affective job satisfaction and cognitive job satisfaction. Affective job satisfaction is a person's emotional feeling about the job as a whole. Cognitive job satisfaction is how satisfied employees feel concerning some aspect of their job, such as pay, hours, or benefits.

Though various researchers and practitioners have provided their own definitions of what job satisfaction is , the two most common definitions describe job satisfaction as "the pleasurable emotional state resulting from the appraisal of one's job as achieving or facilitating the achievement of one's job values"[4]; and "the extent to which people like (satisfaction) or dislike (dissatisfaction) their jobs"[2] .

Organizations should be highly concerned with the job satisfaction of their employees[5] due to the essential role of human resources in organization performance. When employees are satisfied with their work, they are more creative and innovative. On the other hand, a lack of job satisfaction results in the low performance of an employee. Authors[6] conclude that high job satisfaction reduces absenteeism, work related accidents, and employee stress, as well as improving employee life satisfaction. Employee job satisfaction in organizations has attracted research since the middle of the 20th century with the emergence of Maslow's Theory of Needs Hierarchy in 1943. The literature devoted to this issue includes various analytical studies[7,8].

Paper[9] provides the evaluation of employees' job satisfaction and the role of gender difference in the airline industry in Iran. A descriptive analysis was used to determine the level of the employees' job satisfaction. In addition, independent sample t-test was utilized to empirically test relationship between employees' job satisfaction and their gender.

Job satisfaction is an attitude very sensitive to the features of the context in which it is studied[10]. There is no model of job satisfaction[10] applicable to all work settings as there are no general truths regarding the factors and the mechanisms accounting for such an elusive and subjective concept.

Pool's paper[11] is one of the first studies aiming at exploring the level of overall job satisfaction of the faculty members who are employed in the Greek universities. Results showed that Greek academics were moderately satisfied with their job. It is interesting to note that a comparable study of faculty members in Northern Cyprus reports the same levels of job satisfaction[12]. Similar results were also found in a previous study that examined aspects of academics' satisfaction with their job across eight nations (Australia, Germany, Hong Kong, Israel, Mexico, Sweden, UK, USA)[13]. These consistent findings imply that, as professionals, faculty members are generally content with their job in the university.

Basically job satisfaction can be measured using two different approaches. One approach is an overall measure of job satisfaction with the second approach being one that emphasizes several aspects/facets of the job. One of the most widely used measures of job satisfaction is the Minnesota Satisfaction Questionnaire (MSQ). Long and short forms of the instrument are available. The short-form MSQ measures job satisfaction by considering twenty factors/facets of the job and measures the extent to which an individual is satisfied with the twenty factors of the job that determines the overall degree of job satisfaction by adopting a facet-sum approach. The twenty item short-form MSQ rates items on a 5-point Likert scale ranging from 1 (very dissatisfied) to 5 (very satisfied).

In paper[14], it is argued that the use of ordinal values in a Likert scale does not offer the best way in representing the linguistic terms. This paper proposes the use of fuzzy sets to represent linguistic terms in a Likert-type scale and employs the technique using fuzzy conjoint method in job satisfaction evaluation.

The authors[15] propose a fuzzy rule-based algorithm to evaluate the job satisfaction in an organization. First, they collect the effective factors of job satisfaction through interviews. After analyzing the interview results, they propose questionnaires with respect to categories obtained from interviews. Due to qualitative aspect of satisfaction, they use linguistic choices in the questionnaires. While it is hard to disseminate questionnaires to all being interviewed, sampling is performed based on STRATA technique. The results are used to compose fuzzy rules. After defuzzification of the rules output and computing the distance from ideal status, the gaps are determined. The gaps are fulfilled using improvement strategies. Next, they give a brief description of STRATA sampling technique and fuzzy logic. Fuzzy logic is capable of treating this dynamic performance criterion in the uncertain and qualitative environment. In paper[16] the author examines how individuals "determine" their job satisfaction based on changes in situational factors. A simulation model, using Fuzzy Set Theory and System Dynamics, is used. As Piegat[17] state "information obtained from people is usually of less precision (large granularity), while information delivered by measuring devices is of higher precision (small granularity)". For this model, the information is obtained from people. It measures subjective features of work, consequently making fuzzy set theory a highly