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Career Preference of University Students: An Application of MCDM Methods

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Abstract

Since numerous criteria exist, appropriate career selection issue can be thought as a multi criteria decision making (MCDM) problem. The aim of this study is to show that career selection can be carried out via MCDM methods and to compare ordering results of these methods. In this study, a survey is administered to a university students. In application, eight professions are comparatively ranked via some MCDM methods. According to Spearman rank correlation coefficients, multi criteria grading model and PROMETHEE ordering results are almost same also in terms of differing demographical properties, but VIKOR is changing when regret weight changes

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1. Introduction and literature summary of multi criteria decision making (MCDM)

Saunders and Fogarty in 2001 expressed career selection involves the pursuit of benefits to be attained in a varyingly distant future, such as being able to access a desired occupation, earn an income, achieve independence and improve one's competencies (Walker and Tracey, 2012). Appropriate career preference which results in the type of their future life *process*, is an important issue for both individuals and also for the society. Career selection contains many criteria that must be taken into consideration. Since numerous criteria exist, career selection issue can be thought as a multi criteria decision making (MCDM) problem. Career selection can be thought as maturity or

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readiness to career sign (Super, 1980), and a planful attitude requires one to focus on the future, one could argue that individuals who are future-oriented.

Since almost every university in Turkey has “Faculty of Economic and Administrative Sciences”, (FEAS) or its products, every year so many students are graduated from the departments of these faculties. We can observe that the departments of these faculties have more student capacity than other social science and science departments, accordingly the potential of graduates can be imagined. Since so many students graduate from these departments, career preference of these students is so much important for society and the students themselves.

For career preference in terms of factors, some of the studies like frequency analyses, hypothesis testing for demographic characteristics of individuals and Analytic Hierarchy Process (AHP) for determining criteria priorities are used (Pekkaya and Çolak, 2013). Some studies identified the factors that effects career preference by using factor analysis for instance accountants (Ahmadi et. al., 1995) and medical students (Newton et. al., 2005). The purpose of this study is displaying that career preference can be carried out via MCDM methods and comparing ranks which are produced by these methods. This study has a contribution to science literature of career preference or human resources as using MCDM methods for estimation or forecast of any career selection.

Six career selection factors/criteria were identified by Ahmadi et. al. (1995) and accordingly Pekkaya and Çolak (2013) determined the criteria priorities. The priorities for these criteria which are determined via AHP are taken from a study realized by Pekkaya and Çolak (2013). For application of this study, a survey is administered to undergraduate and graduate students of Bülent Ecevit University (BEU), departments of FEAS. Using the calculated criteria priorities and grades with respect to these criteria, eight possible professions are comparatively ranked via some MCDM methods.

MCDM methods are put forward at the end of 1960s. So many techniques are developed for MCDM that have differing advantages. MCDM methods consider distances of best and/or worse desired grade of alternatives for each criterion. Some of these techniques can be listed as AHP, Analytic Network Process (ANP), Elimination et Choix Traduisant la Realite (ELECTRE), Preference Ranking Organization Method for Enrichment Evaluation (PROMETHEE), Technique for Order Preference by Similarity to Ideal Solution (TOPSIS), grey relational analysis (GRA), etc. MCDM literature which is quite vast and growing, is especially about product design, product selection, facility location and facility layout planning, river basin planning, achievement order, financial applications, etc. (Hamzacebi and Pekkaya, 2011). Namely, Feng and Wang (2000) experimented TOPSIS and GRA methods for performance evaluation of Taiwan airlines, Zopounidis and Doumpus (2002) reviewed the literature of MCDM techniques on financial decision making, Albadvi et al. (2007) studied PROMETHEE for decision making in stock trading, Chang and Hsu (2009) assessed priority ranking land-use restrictions in the Tseng-Wen reservoir watershed in southern Taiwan, Chang et. al. (2010), suggested extended TOPSIS for mutual fund performance evaluation, Hamzacebi and Pekkaya (2011) studied AHP and GRA methods for stock selection, Pekkaya and Başaran (2011) studied AHP and TOPSIS for ranking local accommodation firms with respect to service quality.

In this study, MCDM methods of multi criteria grading model (MCGM), TOPSIS, VIKOR and PROMETHEE II used comparatively. MCGM can be thought the most simple and practical MCDM method. The calculation procedure of MCGM is same as weighed arithmetic mean which data must have standardized grades. TOPSIS is also accepted for simplicity and practical usage. Because of using distances of ideal and anti-ideal solutions, the calculation of TOPSIS method is not as simple as MCGM. VIKOR is more appropriate MCDM method when there are contrasting criteria and in compromise ranking, TOPSIS has high sensitivity for much variety in criteria. This situation gives an advantage to VIKOR then TOPSIS. VIKOR has also flexibility in weighting of group utility and regret in calculation process. On the other hand, ranks that calculated by VIKOR need two conditions to be satisfied which may results undesired undemonstrative ranking results and VIKOR has not so much practical usage according to TOPSIS. PROMHETHEE II which is the last method of MCDM used in this study produces complete ranking results but PROMETHEE I produces partial ranking preference flow chart. PROMHETHEE presents at least six well-known flexible function preference procedure for calculation of distances with respect to valuation factors. In this study, V type function is preferred for giving same advantage to all the decision values of over reference point and not omitting the other values.

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