

Decision Support System For Internship Management in Higher Education

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ABSTRACT

The success of the students' internship in business contexts assumes today a core mission in the future professional career of students. There is a window of opportunity to include a decision support decision in a higher education context that could help course coordinators to identify the best students and proposal, and, thus, increase the satisfaction levels of the overall assignment internship process. The proposed model is composed of seven phases which includes the evaluation process of students, proposals and the assignment process itself. The model can also be easily extended to support nine phases, which includes the student's choice of their internship place. The model is characterized to be iterative based on its structure, and also interactive by allowing the participation of the course coordinator and students in the process. The results obtained from four scenarios have demonstrated the validity of the proposed model and the high level of correlation between students and proposals in the assignment process.

KEYWORDS

Ahp, Decision Support System, Higher Education, Hungarian Method, Internships, Students

INTRODUCTION

The youth unemployment crisis has had a profound effect on young people and the societies in which they live. Youth unemployment has been double or even triple the rate of general unemployment in Europe for the last 20 years (Mourshed et al., 2014). According to European Youth Forum study conducted in 2014, there are more than 75 million young people unemployed internationally and in Europe close to one in four young people are out of work (COMEM/GA, 2014).

Other studies reported issues faced by young people is related to quality-employment. The right to have a decent work and protection against unemployment are fundamental human rights (COMEM/GA, 2013). Being able to find quality-work is essential for young people to take part fully in society, ensure autonomy and to avoid the pitfalls of poverty and social exclusion. Looking beyond the first job to the achievement of a decent or stable job, defined in terms of stability and desire to stay put, the analysis conducted by the International Labor Organization in 2015 found that it took an average of 19,3 months for youth to complete the labor market transition (ILO, 2015). At the same time, businesses across Europe insist they struggle to find young people with the skills they need. This situation is surprisingly bigger in countries where youth unemployment is highest (Mourshed et al., 2014). One reason is pointed by Mourshed et al (2014) that consider that employees, education providers, and young people are unable to understand one another. A study conducted by the Institute for Employment Studies in UK corroborates the same opinion by stating that there are difficulties in

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articulating the offers between business companies and the competencies of young graduated people from universities (IES, 2015).

During these last years, Europe has been trying to mitigate this issue and introduced significant changes in academic systems, mainly in higher education. The Bologna Process is one of the most important reforms of higher education in Europe. A very relevant impact of the Bologna Process was the tightening or intensification of working networks between enterprises and universities. According to Härkönen (2015), in general the employers desire to be involved in preparing or coaching the students and graduates to the labor market. The emphasis of universities is typically in the development of work in terms of placements/internships in cooperation with those employers offering short-term internships. The internship is usually part of the course structure and assumes the dimension of an academic internship, where the grade obtained by students during the internship is part of their final mark.

This paper presents a decision support system that intends to help the assignment process between students and internship proposals in higher education institutions. For that, we adopt an approach based on the development of a mathematical process that could be integrated into a support decision systems application in order to agile and simplify the assignment of students for their internship places. The adopted methodology uses the Analytic Hierarchy Process (AHP) and Hungarian methods. The AHP is used to evaluate the students' performance in their soft-skill dimensions and also in the process of evaluating the quality of the proposals submitted by the companies. The adoption of AHP lets us to consider simultaneously quantitative, qualitative, and sometimes conflicting factors. Furthermore, the Hungarian method is used in the assignment process of students for their internships. The adoption of the Hungarian method helps us to ensure that the companies receive the most suitable students for their internship proposals, without the students' final average being the only criterion of serialization. This is also the first study that proposes a decision support system for the allocation of students for internship proposals in higher education, which intends to increase the satisfaction of students and companies, and, in the long term, contribute to reducing the unemployment rate in graduates by promoting the increasing success rate of internships in a business context. The main direct beneficiary of the use of this system will be the tutor responsible for the internship curricular unit, who will have at his/her disposal a tool that will allow the assignment of internship based on the students' profile and the characteristics desired by each business internship proposal. Besides that, other indirect relevant beneficiaries of this process are students and companies.

The paper is organized as follows: first, we perform a revision of literature in three fields: structure of decision support systems, application of a DSS in higher education domains, and analysis of models and metaheuristics that were adopted along the project; then, we describe the adopted methodology and each stage of the proposed meta-heuristic model. Subsequently, we analyze the main results considered four scenarios, where we change the number of students, proposals and the model structure adopted to solve the problem; finally, we draw the conclusions of our work.

LITERATURE REVIEW

Structure of Decision Support Systems

Decision Support Systems (DSS) deal with semi-structured problems. This viewpoint is reinforced and summarized by Power (2002), that considers a DSS as an information system that is not an SDS/TPS (transaction processing system). Therefore, the definition of a DSS is qualified by (1) the categories of use and (2) movement along the structured/unstructured continuum (Roger & Hayen, 2006). Typically, these kinds of problems arise when managers in organizations are faced with decisions where some, but not all aspects of a task or procedure are known (Averweg, 2012). In order to solve these problems, the active presence and judgments of managers becomes mandatory.

These systems allow users to perform comparisons between current and past data, generate forecasts, generate optimal solutions to problems, provide suggestions, among others. The basic

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