ABSTRACT

This chapter evaluates study program innovativeness based on an ontology-based measurement. It was supposed that topics of papers in leading journals in economics and management can be used as a “pattern of innovativeness” to reveal a connection between innovativeness of top innovative study programs of universities and the subjects from the research articles. The proposed method has been implemented by authors in R and Python languages to analyze the programs in economics and management at the top innovative universities. The proposed methodology has a much wider range of applications than the assessment of the innovation of study programs and can be useful for measuring innovative performance of different aspects of research activities or publications and for identification of the top innovative subjects.
INTRODUCTION

Nowadays universities have a huge impact on the research and education development. This fact creates a necessity of continuous evaluation of higher education institutions activity in the area of fundamental research, teaching activity and knowledge transfer. The design and implementation of the ontology-based system for the evaluation of study program innovativeness and conducting the evaluation of two study programs from the point of view of their innovativeness is the main goal of this work. The ontology describing research and didactic areas existing within economics and management domain constitutes a core element of the proposed system. In the chapter this role will be played by the JEL classification system proposed by the American Economic Association.

During the first stage of the analysis, the innovativeness of every concept existing in the JEL classification system will be performed. It will be done with the use bibliometric measures calculated for papers annotated by JEL codes. Simultaneously with the calculation of bibliometric measures, keywords characteristic for every JEL code will be retrieved.

The second stage of the research will be focused on the analysis of university curricula. First, description of every course will be tokenized into phrases. Next, by the comparison of phrases taken from course description with keywords assigned to JEL concepts, the identification of topics discussed in syllabuses will be performed. Then the results of the first stage of analysis will be used for the evaluation of innovativeness of every topic existing in the course description.

As a final result the measure of innovativeness for a course description will be calculated.

The idea presented above will be implemented with the use of R programming language and will be used for analysis selected curricula of the top innovative programs.

BACKGROUND

Operationalization of Innovations

There are number approaches to the operationalization of innovations. In general, innovation refers to a new or improved product or process concerning the business processes or company. One of the most authoritative sources for understanding innovations is the “Oslo Manual: Guidelines for Collecting, Reporting and Using Data on Innovation” which has been updating from one edition to the next one (OECD/Eurostat, 2018). Four main types of innovations are distinguished in the Oslo Manual. The first one is a product innovation, as a new or improved good or service that differ significantly from the firm’s previous goods or services and that has been introduced on the market (OECD/Eurostat, 2018). The second type refers to a business process innovation, that is a new or improved business process for one or more business functions that differ significantly from the firm’s previous business processes and that has been brought into use by the firm (OECD/Eurostat, 2018). The third is an organisational innovation and involves the implementation of a new organisational method in the firm’s business practices, workplace organisation or external relations (OECD/Eurostat, 2005, p. 51). The final type is a marketing innovation and this refers to the implementation of a new marketing method involving significant changes in product design or packaging, product placement, product promotion or pricing (OECD/Eurostat, 2005, p. 49). In academic discourse, for example, G. Yezersky introduces a system theory of innovations, which captures the diversity of innovations as products, processes, methods of marketing, and new ways of engaging