



“Gheorghe Asachi” Technical University of Iasi, Romania



ANALYTIC HIERARCHY PROCESS IN ASSESSMENT OF HEALTHCARE WASTE MANAGEMENT IN EUROPEAN UNION COUNTRIES

Agata Mesjasz-Lech^{*}, Marta Cholewa-Wiktor²

¹Czestochowa University of Technology, Faculty of Management, Al. Armii Krajowej 19B, 42-200 Czestochowa, Poland

²Lublin University of Technology, Faculty of Management, ul. Nadbystrzycka 38, 20-618 Lublin, Poland

Abstract

This article focuses on research on the application of the Analytic Hierarchy Process method in the analysis of healthcare waste management in individual European Union countries. The aim of the study was to analyse the relationship between healthcare expenditure and healthcare waste management methods in European Union countries. To achieve this aim, the following objectives were formulated: to identify this relationship, to rank countries in terms of expenditure and waste management methods, and to examine the stability of these rankings. Moreover, two hypotheses were tested: (1) waste management methods higher in the hierarchy are associated with higher healthcare expenditure; and (2) the rankings of European Union countries in terms of waste management methods based on the Analytic Hierarchy Process (AHP) remained stable in 2014, 2016, 2018, and 2020. The study examined variables related to healthcare expenditure, the amount of waste generated, and the treatment of waste by waste management operations. The analysis was conducted for 24 European Union countries. The data comes from the Eurostat database and covers four years: 2014, 2016, 2018, and 2020. The main methods used to verify the hypotheses and answer the research questions were panel data models, the Analytic Hierarchy Process and Spearman's correlation coefficient. The results indicate a statistically significant relationship between healthcare expenditure and the amount of waste incinerated, recovered for energy, and recycled, although the strength of this relationship varies depending on the waste group considered. The analysis also shows that European Union countries apply similar approaches within the waste management hierarchy for both hazardous and non-hazardous waste, which is reflected in comparable final country rankings for these waste groups. The stability of country rankings across the analyzed years suggests a consistent approach to selecting waste management methods. At the same time, the correlation coefficients reveal that the specific methods adopted by individual countries for hazardous waste management differ from those used for non-hazardous waste.

Key words: Analytic Hierarchy Process, healthcare waste, healthcare waste management, multi-criteria decision making

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* Author to whom all correspondence should be addressed: e-mail: a.mesjasz-lech@pcz.pl; Phone: +48343250395