
A STUDY ON GOOD PRACTICES AND INTERNATIONAL COOPERATION IN THE EUROPEAN HIGHER EDUCATION

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ABSTRACT

In this academic work, an overview of the best practices observed in Higher Education, as well as various relevant and significant European projects, is revisited, reviewed, analyzed, and updated. In addition to the projects developed, promoted, and funded on behalf of the ERASMUS+ Program, managed by the Education, Audiovisual, and Culture Executive Agency (EACEA), the COST Actions, i.e., European cooperation initiatives in science and technology, are also addressed. The last five years' period (2020-2024) is considered here.

The central and main purposes of this study are to reinforce, in a clear and in-depth manner, a comprehensive understanding of the main and most relevant current and emerging trends in education in the field of Operations Research / Management Sciences (OR/MS), with the aim of contributing even more significantly and consistently to a broader, more solid, and deeper knowledge of the various topics related to higher education, including, in particular, relevant, transformative, and impactful contributions in the distinct and important areas of STEM (Science, Technology, Engineering, and Mathematics).

The main and most relevant characteristics associated with good and recommended practices, as well as international cooperation processes in the field of education in OR/MS, are duly addressed and analyzed in two distinct and complementary ways [1]:

A) The main activities in teaching and learning of OR/MS, such as classroom approaches, courses design, courses assessment, immersive/virtual learning, including AI-based activities.

B) The applications of OR/MS tools on Education, such as Big Data Analytics, Data Envelopment Analysis (DEA), Data Mining, Decision Support Systems (DSS), Graph Theory/Combinatorial Optimization, Heuristics and Metaheuristics, Modeling/Simulation, Multi-criteria Decision Analysis (MCDA), Scheduling and/or Timetabling, Routing for school transportation, and Statistics, among others.

The direct and indirect impact of these innovative and structured practices on organizational effectiveness and the overall performance of higher education institutions are discussed and analyzed, so as its amplitude, along with the digital transitions current framework. Additional and complementary developments are also included, either addressing the prospects for treatment of initiatives within the European framework or at international level, including, for example, programs such as the European Social Fund Plus (ESF+) or global reference institutions such as the United Nations Educational, Scientific and Cultural Organization (UNESCO).

Keywords Higher Education · OR/MS tools · COST Actions · ERASMUS+ Projects · Training Actions

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