

Universitatea POLITEHNICA din Bucureşti  
Facultatea de Antreprenoriat Ingineria şi Managementul Afacerilor  
Departamentul de Inginerie Economică

## **TEZĂ DE ABILITARE**

***CERCETĂRI ŞI CONTRIBUȚII PRIVIND ASPECTE  
TEHNICO-ECONOMICE ALE UNEI AUTENTICE  
DEZVOLTĂRI DURABILE SIGURE ŞI  
RAȚIONALE***

## **HABILITATION THESIS**

***RESEARCH AND CONTRIBUTIONS REGARDING  
TECHNIC AND ECONOMICAL ASPECTS OF AN  
AUTHENTIC SAFE AND RATIONAL  
SUSTAINABLE DEVELOPMENT***

*Domeniul: Inginerie şi Management*

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## Abstract

The habilitation thesis "*Research and contributions regarding technic and economical aspects of an authentic safe and rational sustainable development*" is the result of a constant research work developed over 14 years after earning the PhD degree, when I faced the challenges of the complex field of *management and engineering*. The habilitation thesis summarizes the research I have conducted to understand the various facets of sustainable development, particularly in the fields of energy, tertiary education and welfare. I have identified a new type of sustainable development and its architecture, saferational development, that has been built on the premises of safety and rationality and has been appreciated and considered to be an absolute novelty at international level, as proven by publications in journals of the first quarter / half of the list provided by the Executive Unit for Financing Higher Education, Research, Development and Innovation (UEFISCDI-CNCSIS) (known as the red / yellow lists). I believe that what I have done so far, although it has been materialized in valuable publications in journals belonging to the red and yellow lists of UEFISCDI-CNCSIS and successful research grants, is just the beginning of a research path that has the potential to become extremely prolific, with scientific contributions on several tracks of *management and engineering*.

The habilitation thesis is written in accordance with the legal provisions and is divided into 3 sections: the first section presents the scientific, professional and academic achievements on 3 interdisciplinary themes and contains 2 chapters. The second section takes into account the plans for developing my own professional, scientific and academic career, as well as it identifies new directions for research/teaching and contains 2 chapters. The third section details the bibliographic references associated with the contents of the first two sections. The thesis also contains an appendix in which the main contributions are presented for each interdisciplinary field.

The habilitation thesis starts with chapter 1 which contains the presentation of the most important didactic/academic and scientific/research contributions obtained after earning the PhD title. Thus, after a brief review of the educational path, from the graduation of the university, to the earning of two PhD degrees and the successful completion of a postdoctoral research program, the main professional milestones from the position of teaching assistant to university professor are presented. The most important educational achievements are then showcased that reveal the didactic aptitudes and academic performances - such as the integrated generation of 3 new disciplines for which I have fully developed the theoretical/applied parts, as well as the development of disciplines with a great tradition in engineering education, coordination of numerous diploma/dissertation projects, the successful coordination of student research through participation in many communication sessions for students enrolled for Bachelor's or Master's degrees, drafting of manuals, student guides, specialized books, as well as online materials available for all taught subjects. In addition, in my area of expertise, I coordinate the Master's Program of *Economic Engineering in Industrial Activities* within the Faculty of Entrepreneurship Engineering and Business Management, for which I also give tutoring.

The involvement in scientific research is then highlighted, based on an original and relevant scientific production in the domain of *management and engineering*. The visibility of scientific production is presented based on the publications included in the UEFISCDI-

CNCSIS yellow and red lists, research grants obtained through national and international funding, awards at national and international level, invited lectures at international prestigious conferences, editorial and review activities for many well-known international journals and conferences and involvement in the evaluation of research activities for UEFISCDI-CNCSIS (UEF-ID: U-1700-035G-0028). However, my career does not only involve the acquisition of scientific and didactic titles, but also a continuous concern for personal development and self-improvement, my work being a symbiosis between didactic and scientific work. Throughout my career there is a permanent connection between the research results and the introduction/modernization of the disciplines that I teach with great devotion and enthusiasm. Consequently, publications in the field of European economics, sustainable development, innovation and entrepreneurial culture, tertiary education, energy economics, resource economics have always found a place in the teaching materials that I have developed for students enrolled for Bachelor's or Master's degrees.

The most relevant results of my research after the completion of the doctoral studies have been published in 8 books, 16 articles in quoted journals, and in volumes of Web of Science (ISI proceedings), of which 3 on the red / yellow list of the UEFISCDI-CNCSIS, 28 articles in journals, and volumes of scientific conferences indexed in other international databases (BDI). The publications produced 23 citations in journals and volumes of conferences present in Web of Science (ISI) or BDI.

Chapter 2 presents the results of the research based on my own publications and on the implementation of research projects/grants on 3 interdisciplinary fields related to a new interpretation of sustainable development, which I have grouped on 3 axes:

1. Axis 1 SESR: *Sustainable energy - safe and rational approach*
2. Axis 2 SRDW: *Saferational Development - welfare approach*
3. Axis 3 STEE: *Sustainable Tertiary Education - approach related to education for engineers*

Chapter 2 explores in detail the scientific contribution of each interdisciplinary direction, subchapter 2.1 presents contributions in the area of sustainable energy (SESR axis), subchapter 2.2 presents contributions to the welfare sphere (SRDW axis), and subchapter 2.3 presents contributions to tertiary education (axis STEE). However, it is worth mentioning that the research on the 3 thematic directions has important parts of conceptual overlapping and some elements from one direction can be found in the others. Moreover, only articles published as first author, most of them as sole author, have been taken into account to highlight my scientific independence and the quality of my own contribution to the building and development of saferational development concept. By opening new research tracks, I have proposed a rejuvenation of the concept of sustainable development, more adapted to the present, where the economic, social and environmental concerns are to be embedded within two dimensions of rationality and safety. In this way, solutions to current challenges could be easier identified, having in mind the welfare of the present generation in terms of quality of living, but also respect for human and eco-systems health and safety. The safe & rational preconditions of sustainability are meant to create a conducive environment for all

stakeholders, from students and specialists to legislators, policy makers and governance systems in establishing a long-term welfare, but gained in a safe and rational manner.

The second section is dealt with in chapters 3 and 4, the first focusing on the development plans of my own professional, scientific and academic career, and the second highlighting the identification of new research and teaching lines. Considering the above, as well as achieving a total score of more than 3 times above the minimum standards, I am convinced that my career development plans are extremely robust, ambitious but realistic, and they may anticipate an independent development of the future academic career by tackling both educational and research aspects. Thus, the scientific/research perspectives are presented, given the proven competences in the fields of multidisciplinary research. The guidelines of the future activity on the educational track are presented that include the incorporation of the research results into the development of new disciplines based on authentic sustainable development, proving once again the value of my own contributions for the development of knowledge in the field of *management and engineering*.

The research lines opened by the saferational development have only been investigated so far in the area of sustainable energy, sustainable tertiary education and welfare, with great potential for development in any traditional or modern sector of the national and European economy, thus opening the way for new internationally relevant directions. I hope that my ideas and contributions will open a new road with many collaborations, publications and research projects so as to further push the frontiers of this field to new challenges. Thus, a safe and rational approach of entrepreneurship and innovation, industrial development and smart technologies, sustainable development of services such as tourism and logistics of goods, agriculture and sustainable land use, climate change and environmental pollution, sustainable education and of the development of Internet of things (Iot) may be several new tracks of doctoral research.