Models of Research, Development and Innovation Systems from the Perspective of Complexity Theory: A Case Study of the Republic of Moldova

Rodica Cujba [1, 2], Florin Gheorghe Filip [3]

[1] Technical University of Moldova, Republic of Moldova

[2] Information Society Development Institute, Republic of Moldova

[3] Romanian Academy, Romania, ffilip@acad.ro

rodica.cujba@adm.utm.md

Abstract. Complexity Theory allows to better understand how some phenomena that surround us and are difficult to describe through traditional approaches of a single scientific domain appear, evolve and adapt. These phenomena have been called "complex systems". The objective of this paper is to analyse the *research-development-innovation* (RDI) system from the perspective of complex systems. The features of a complex RDI system are identified. It is argumented the importance of modelling RDI system for efficient management and decision-making under uncertainty. Several modelling approaches are reviewed with a view to setting the stage for proposing a comprehensive conceptual representation of the RDI system. The inputs, activities and various possible outputs, effects, and impact are described in details. Other possible models such as the Triple Helix and X-type, Y-type RDI models are described and their applicability is analysed. As a case study, a RDI system of the Republic of Moldova is analysed and modelled. A set of recommended decisions is presented together with a SWOT analysis.

Keywords: complex system, conceptual model, decision-making, methods of modelling, Triple Helix model

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