



H.F.R.I.
Hellenic Foundation for
Research & Innovation

Description of the funded research project
2nd Call for H.F.R.I. Research Projects
to Support Post-Doctoral Researchers

Title of the research project: Smart Technologies and Innovation Systems in Regional Development: Approach with System Dynamics

Principal Investigator: ELPIDA SAMARA

Reader-friendly title: "STEI RED"

Scientific Area: EP9. Management & Economics of Innovations

Institution and Country: ELIDEK, GREECE

Host Institution: UNIVERSITY OF WESTERN MACEDONIA

Collaborating Institution(s): -

Project webpage (if applicable): -



Budget: 124.611 €

Duration: 36 months

Intelligence, from the innovation point of view, cooperation and coordination, can be developed effectively through networking (Antonelli and Cappiello, 2016). To this end, the use of web platforms in policy formulation and strategic planning could be taken as a key component of the Regional Innovation System (Komninos, 2018).

The use of Smart Technologies in Regional Innovation Systems for Regional Development is now being studied by this research proposal. To do so, we will create a dynamic model that will capture at regional level the contribution of smart technologies to the factors that shape a Regional Innovation System. This model will be implemented by two Greek regions with different Regional Development Indicators, the Region of Western Macedonia and the Region of Central Macedonia, and will serve as a guide - methodological tool - for the formulation of the appropriate Regional Policy as it will allow the identification of the weak and strong points within the Regional System, enhancing those that generate multiplier benefits at the level of Regional Development.

A more general question to be addressed by this research is whether the use of new technologies in a Regional Innovation System benefits Regional Development, defined and measurable by specific indicators.

More specifically, the questions raised by this survey are as follows:

- (1) How can the use of smart technologies improve the effectiveness of the Regional Innovation System and promote more dynamically the regional development processes?**
- 2) How can the dynamic model illustrate the multiple relationships between intelligent technologies, innovation systems, and regional development?**
- C) What are the institutional and systemic bottlenecks (interference factors) of smart specialization research and innovation strategies and how the use of intelligent technologies can improve the scientific basis, data, methods and participatory processes of smart specialization strategies?**

The research work to be developed in the context of this research is characterized by scientific originality as it has been found from the extensive bibliographic review of empirical research conducted within the Regional Innovation Systems that there were not many contributions to the bibliography describing the contribution of new technologies to the shaping of innovation policies and more specifically smart specialization strategy. In addition, the minimal contributions that have been identified do not go beyond simple descriptive analysis. This was also a key reason why the research team of this research showed interest in this field of research. Therefore, in the first place, this research covers the gaps identified in the literature with regard to the contribution of new technologies to regional development using simulation.

In addition, the use of dynamic systems theory is another scientific originality as the RIS studies so far have been based on factor analysis, giving only simple comparative results between the Regions. Regions and urban areas are complex social ecosystems where the main concern is to ensure sustainable development and quality of life. Complex systems can be defined as "systems consisting of (usually large) number of interactive entities or factors whose understanding requires the development or use of new scientific tools, nonlinear models, non-equilibrium descriptions and computational simulations".

The approach to system dynamics enables the development of scenarios to improve regional development with the help of simulation. Secondly, a dynamic model is being developed specifically designed to study the impact of new technologies on regional performance. The survey will contain extensive numerical results on the regional performance of two Greek Regions for different innovation policy scenarios.

Expected results & Research Project Impact

The expected results of the research project from a scientific, political and economic point of view are:

From scientific point of view

As mentioned above, this research is about to fill a scientific gap on the impact of smart technologies on Regional Development. With the model we create we think will define the stage for the next programming period 2021-2027, where the smart specialization agenda and RIS3 strategy will reach a more mature stage, enabling higher quality and more informed strategies.

In addition, the results of research can contribute to the strengthening of the regional innovation system, as the contribution of the model we have developed is very important as it is a guide to shaping policies and tactics aimed at innovative action at regional level, allowing recognition of strong or weak points within the system and enabling policy makers to reinforce points with the most significant multiplier benefits regional development.

From a social point of view

- Improving the strategic innovation process
- Strengthening governance and stakeholder involvement
- Making innovation policy a priority for all regions
- Focusing investments and creating synergies

From an economic point of view

- Developing / implementing strategic economic transformations
- Responding to economic and social challenges
- Profile of the regions vis-à-vis international investors
- Avoiding overlapping in development strategies
- Promoting the diffusion of knowledge and technological diversification

The importance of this funding

The H.F.R.I. funding of STEI RED" project by EL.ID.EK. is very important as in this way they will be engaged in the project in addition to one PhD candidate that was provided other 3 researchers to conduct the research. The field of study of Regional Innovation Systems with the dynamic simulation approach is an innovative approach that has not been covered in the literature.

With this funding, the research team aspires to develop a model to capture the impact of smart technologies on Regional Development over a 15-year time horizon.

It should also be emphasized that the goal of the research team is the application of the model beyond the 2 Greek regions that are initially mentioned in the project and in a European region, in order to generalize the use of the tool.



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COMMUNICATION

185 Syggrou Ave. & 2 Sardeon St. 2
171 21, N. Smyrni, Greece
+30 210 64 12 410, 420
communication@elidek.gr
www.elidek.gr