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Priority Activities for Implementing Industry 4.0—The Case of Serbia †

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Abstract: The industry 4.0 concept is essential to fostering innovation and promoting economic growth. Its successful implementation involves the entire innovation ecosystem, as defined by open approaches to innovation, which emphasize collaboration among various actors in the innovation system. The efficiency and intensity of interactions between different actors determine the innovation activity needed for industry transformation. The integration of technologies is at the heart of Industry 4.0. By conducting a survey among the most important actors in the innovation ecosystem, this research identifies priority activities for implementing the concept in Serbia.

Keywords: Industry 4.0; priority activities; national innovation system; preparation process; Serbia

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1. Objectives

The purpose of this paper is to assess the priority activities in the Republic of Serbia's preparation for Industry 4.0 implementation. As a result, key participants in the national innovation system were identified based on their role in the generation, diffusion, and application of scientific and technological knowledge [1,2]. Enterprises (large enterprises and SMEs), science and academia, innovation infrastructure, organizations engaged in innovation activities, start-up companies, actors involved in the promotion and enhancement of innovations, government departments, and information and communication technology companies have been identified as the primary participants in the national innovation system.

2. Methodology

An online survey was conducted between March and April 2021 to empirically assess the priority activities in the preparation process for implementing Industry 4.0. A multiple-choice question with predefined answers was included in the questionnaire, and respondents were asked to rate the answer options on a 7-point Likert scale [3,4]. The survey asked participants to "rank the activities in order of priority in preparing the Republic of Serbia for the implementation of Industry 4.0". The responses were gathered from 87 representatives of selected innovation ecosystem participants (40 enterprises, 10 start-ups, 8 representatives of science and academia and organizations engaged in innovation activities, 6 representatives of actors involved in the promotion and enhancement of innovations and information and communication technology companies, and 3 government departments).

3. Results

According to the research findings, the highest priority in preparing the Republic of Serbia to implement Industry 4.0 is the definition of strategic documents, followed by the announcement of tenders and the allocation of funds for developing Industry 4.0. Encouragement of greater economic interest in the application of Industry 4.0, development of

digital infrastructure, and development of a stimulating legal framework for Industry 4.0, on the other hand, share third place. Among other important activities, stimulating measures for the development and retention of competent staff, informing the public about the significance of Industry 4.0, studies and professional publications in the field of Industry 4.0, and the development of maps for the presentation of capacities were highlighted.

4. Implications

The research findings could have theoretical, economic, and broader social implications. The findings can inspire future research by providing a more detailed analysis of each activity and its role in implementing Industry 4.0, as well as a comparative study of their impact on neighboring countries. The survey results suggest a set of recommendations for Serbian policymakers. The findings serve as a starting point for improving the conditions for implementing Industry 4.0. Implementation of identified priority activities and Industry 4.0 provides an opportunity to solve problems in the fields of industrial production, environmental protection, digitalization, energy efficiency, and so on.

5. Originality Value

There is no comparable research in the Republic of Serbia. This study is unique due to the survey participants and the results obtained. The research is significant because of the unique findings on priority activities for implementing Industry 4.0.

6. Contribution

The scientific contribution of the research is a comprehensive approach to analysis and applied methodology. The research's findings advance theoretical and methodological frameworks in the field of implementing Industry 4.0. The research findings may have an impact on decision makers and the process of developing public policies. The findings are meant to serve as the foundation for evidence-based public policy decision making in the field of innovation.

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