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# INTRODUCTION

Contemporary science is increasingly based on interdisciplinarity and the multifaceted approach of researchers to the phenomena and processes presented. The demand for interdisciplinarity is a response to the challenges arising with the development of science: firstly, as a response to the progressive professionalisation, specialisation and institutionalisation in the field of scientific research; secondly, as a response to the challenges facing science as our reality in its nature and structure becomes increasingly complex and thus more difficult to explore scientifically.

Interdisciplinarity means focusing attention on issues that are located at the interface of different disciplines. The Special Issue presented here is the result of the collaboration of researchers representing various scientific disciplines from administration and policy sciences, through psychology, economic sciences, health sciences and information technology. The submitted articles demonstrate the process of breaking free from a narrow approach to complex issues, grounded within a single field of knowledge, and the many research limitations that result. The articles presented are the result of scientific collaboration both at the interface of the above-mentioned disciplines, as well as collaboration between different Universities and the wider business (business practitioners).

The articles present different research approaches. Induction was used as the main research method. It involves drawing general conclusions or establishing regularities on the basis of an analysis of empirically established phenomena and processes. It is a type of inference based on details about the general properties of a phenomenon or object. The application of this method requires the assumption that only facts can form the basis of scientific inference. These facts are real-life situations (e.g. social, legal or organisational). Inductive methods include various types of analysis, expert opinion, statistical data and scientific documents used in social research.

In addition, the articles make use of two general research methods, i.e. analytical and synthetic methods, characterised by a particular approach to the study of reality. Analytical treats reality as a collection of individual, specific features and events. Following this research method involves breaking down

the object of study into parts and examining each part separately or detecting the components of that object. The disadvantage of the analytical method is the over-exposure of details, sometimes causing the whole object of study to be lost from view. This makes it difficult to gain a full and objective understanding of reality, which is admittedly a collection of independent partial elements, but at the same time a set of parts closely related to each other to form a limited whole. The synthetic method treats reality as a collection of characteristics, its implementation consists in looking for common features of various phenomena and events and then binding them into a unified whole. Thus, the synthetic method examines and defines the totality of the object of research. Using a comprehensive (hybrid) research approach, the so-called triangulation of data sources was also applied, i.e. comparing information, methods and tools used in different scientific disciplines to solve research problems from the perspective of many different practical and theoretical research concepts.

Interdisciplinarity as a demand for the study of reality across the boundaries of scientific disciplines is an important added value, because the analysis of the studied reality from the perspective of different scientific branches broadens, deepens, modifies and clarifies the research results, which is extremely developmental and beneficial for science.

Interdisciplinarity means both going beyond a particular discipline, the one represented by the researcher, and considering a particular topic from different perspectives (e.g. administrative and political sciences, management or computer and telecommunications sciences).

Among others, the following research methods were used in the articles: comparative analysis, functional analysis, which was applied in order to grasp the cause-effect relations of the studied phenomena and processes, research methods from a dynamic perspective (important both for a holistic view of the specificity of a given problem and for the assessment of the applicability of the obtained results), and methods of quantitative and qualitative analysis.

Reflections on interdisciplinary research lead to the conclusion that it requires increasingly complex methods of empirical research. This necessity results, among other things, from the dynamics of the surrounding reality, the unification processes of scientific disciplines, as well as the progressive digitisation

and automation of social processes, which implies a modern understanding and explanation of constantly changing social and economic phenomena.

In the context of interdisciplinary research, the articles presented exemplify how the application of modern technologies such as machine learning, expert systems, measurement systems and advanced data analysis methods can produce breakthroughs and innovative solutions. The studies show how technology can support and enrich traditional therapeutic approaches, leading to better understanding and support of patients, how advanced imaging and analytics techniques can lead to better diagnosis and monitoring of patients' conditions, or how data analytics and process modelling techniques can be used to optimise business operations and improve operational efficiency. Other approaches to science present technologies that can be used to create innovative solutions to support human health and wellbeing.

Interdisciplinarity in research enables the integration of knowledge from different fields, leading to a more comprehensive and holistic understanding of the problems under investigation. Thanks to the cooperation of scientists from different disciplines, it is possible to create innovative solutions that have a real impact on the development of science and society.

*Prof. Tomasz Rymarczyk*

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