Chapter 2
Quantum Theory and Artificial Intelligence in the Analysis of the Development of Socio-Economic Systems: Theoretical Insights

Jurgita Bruneckiene
Kaunas University of Technology, Lithuania

Robertas Jucevicius
Kaunas University of Technology, Lithuania

Ineta Zykiene
Kaunas University of Technology, Lithuania

Jonas Rapsikevicius
Kaunas University of Technology, Lithuania

Mantas Lukauskas
Kaunas University of Technology, Lithuania

ABSTRACT

The chapter is designed to stimulate a discussion on a new approach that combines quantum theory with artificial intelligence in the analysis of the economic development of socio-economic systems. The chapter introduces the specifics of the modern socio-economic system and the challenges to economic development. After that, the chapter discusses the possibility and compatibility of approaches (quantum theory) and tools (artificial intelligence) for analysing economic development. The chapter contributes to a new approach in economic development theory by integrating quantum theory and artificial intel-

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ligence possibilities. Additionally, the competences needed to use artificial intelligence in the analysis of economic development are presented. The value of the chapter is in its contribution to the original methodological justification of the use of quantum theory and artificial intelligence in the analysis of economic development.

INTRODUCTION

Politicians, investors, businessmen, economists, and residents have always been interested in the peculiarities, tendencies, and trajectories of the economic development of nations. Indicators of country development directly affect the strategic decisions of investors and businessmen, as well as the welfare of residents and economic subjects, economic competitiveness, resilience to economic shocks, and the attractiveness of living, working, and investing. Since ancient times scholars have been trying to understand, explain, and find the answers to why countries develop differently and why some reach a higher level of development than others.

The economic development of countries is still a popular and attractive topic for researchers, who try intensively to formulate means and ways of analysing development, to explain the causes of underdevelopment, to classify countries according to their development levels, and to contribute to the construction of economies according to ideological bias (Dulupçu & Okçu, 2000). While this topic has for a decade given up its predominant position in the face of opposition from studies on globalisation, integration, competitiveness, resistance, and other social phenomena, it has recently been rediscovered and is attracting ever-increasing attention. This was prompted by the fact that today's top-level strategies for decision-making are no longer sufficient to characterise the global economy as a binary category consisting of developed and less developed; "primary," "secondary," and "tertiary" sector models; or as an element of the linear conception of economic history. Disappointment in traditional approaches has stimulated policy makers to reconsider the old instruments to suggest the kinds of interventions that are expected to enhance economic development more successfully (Varga, 2017).

In most cases, researchers use the features of economic development as a tool for analysing or classifying, structuring, or ranking economies. The traditional concept of economic development explains the difference in development amongst countries in close reference to income distribution equality and economic growth connections. The use of advanced technologies has enabled the expansion of the field of economic research and has helped in attempts to predict the future and to answer the questions how and why. Sachs (2000) analysed countries' economic by asking why globalisation seems to help some places much more than others; Kim (2014, 2017) sought an answer to how a country's economic growth affects the quality of life. Escosura (2005) asked why there is a divergence between early starters and latecomers in modern Europe. Chen et al (2014) examined the relationship between urbanisation and economic development. Leimbach (2017) forecast how the regions of the world will develop in the 21st century. The analysis of scientific literature has supported a broad spectrum of research on the analysis of economic development, ranging from comparing one or several countries to a very large number of countries (e. g., 149 or 222), or one or more economic growth determinants with the impact of structural reforms on overall economic development; urban or regional analysis; and past to future development bias.