

## Chapter 14

# Statistical Approach for Ranking OECD Countries Based on Composite *GICES* Index and I–Distance Method

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### ABSTRACT

*This chapter will explore the impact of cognitive skills on education. In the case of OECD (Organisation for Economic Co-operation and Development) countries, it will be examined the relation between the level of education to the economic situation of a state. Case study work is based on a statistical approach of OECD countries ranking, based on The Global Index of Cognitive Skills and Educational Attainment (GICES) and Ivanovic distance (I-distance). The chapter will be presented to rank these countries based on the value of the global index. Using I-distance method it will be formed a new order, and then it will be carried out a comparative analysis of these two ways of ranking. The aim of the chapter is to present a new approach to the evaluation of a composite indicator based on the multivariate statistical analysis.*

## INTRODUCTION

There were, throughout history, many theories about the reforms which lead to the economic growth in general (Scully, 2014). Besides changes in government and politics, a lot of different factors influenced some countries to become world powers and others to still be in a developing state (Balcerowicz, 2014; Aghion & Durlauf, 2005). Some of the newer factors that also happened to benefit economic growth are knowledge and education (Machlup, 2014).

The importance of education is on the list of priorities for economic development and progress in every country (Carlson, 1999). As shown in numerous studies (Benos & Zotou, 2014), education correlates with economic growth. In addition to being based on the adoption of series of rules and social values acquired through schooling, education reflects in knowledge and skills. By analyzing the economic outcomes, The Organisation for Economic Co-operation and Development (*OECD*) estimates that better skills lead to the economic growth in a half of the developing countries in the last decade (*OECD*, 2013). The difference is that the developing nations build their national infrastructures and create rewarding skilled jobs because current education systems are often proven to be inadequate (Lee & Chung, 2015). Success lies in having students learn basic cognitive skills which affect labor markets and aid economic growth substantially. World's leading countries represent a learning model for other countries, regarding learning outcomes (Koraneekij & Khlaisang, 2015), performance improvement (Nuchwana, 2012), and student's satisfaction (Aziz et al., 2012). The goal of these efforts is to make a contribution on how to improve teaching, learning, and the performance of the education systems (Gudeva et al., 2012). From another point of view, Bowles and Gintis (2011) insist that higher levels of education and economic success (income) tend to go together. Intellectual skills and the skills developed or validated in the schools give only a small causal contribution to the economic progress of the people (Bowles et al., 2001).

For many indices, education is just a part of the measurement. For example, Human Development Index (*HDI*) includes *School life expectancy* of children of school-entrance age and *Mean years of schooling* of adults as its new educational indicator (Hidalgo, 2010). Better life index (*BLI*) has identified Education as essential to comparing well-being across the countries (Lind, 2014). Just a few indices measure the real influence of the education output on the economic growth. One of them is The Efficiency Index that demonstrates which inputs funded by the governments substantially make a difference, and how countries are combining these inputs to produce the best educational outcomes (Dolton, Marcenaro-Gutiérrez & Still, 2014). However, the main limitation of the previously mentioned approaches is that they consider only one measurement for evaluation of the educational performance.

One of the potential alternative measures of the education output is Global Index of Cognitive Skills and Educational Attainment (*GICSES*), created by The Economist Intelligence Unit (*EIU*). The *GICSES* is a composite index that analyzes member countries of the *OECD* and ranks them based on the value of the global index using z-score normalization method. The *GICSES* contains comparative data divided into two categories: *Cognitive Skills (CS)* and *Educational Attainment (EA)*. It measures more than just the education output to determine if a country is making economic growth through it (Petrosillo et al., 2013). *GICSES* explores the concepts of cognitive science and cognitive skills, the way education is viewed through the term of a learning curve, and how these terms are related. Pearson learning curve leads to greater efficiency, emphasizing the importance of the outputs of all products and services, in order to safely contribute to an efficient education system performance in the 21st century (Waldron & Kaminer, 2004).

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