IBIMA Publishing
Communications of International Proceedings
https://ibimapublishing.com/p-articles/45ISM/2025/4537525/
Vol. 2025 (13), Article ID 4537525

Conceptual Framework of a DEA-Driven Decision Support System for Pandemic Response*

Radoslaw KAPLAN and Piotr LEBKOWSKI

AGH University of Krakow, Poland

Correspondence should be addressed to: Radoslaw KAPLAN, rkaplan@agh.edu.pl

* Presented at the 45th IBIMA International Conference, 25-26 June 2025, Cordoba, Spain

Abstract

This paper presents a conceptual framework for assessing the effectiveness of pandemic response measures using Data Envelopment Analysis (DEA) as a decision support tool. The proposed model integrates both discretionary and non-discretionary inputs, as well as desirable and undesirable outputs – extending the classical DEA approach to better reflect the complexity of public health systems in crisis contexts. The paper highlights the methodological advantages of this approach, including its ability to identify efficiency benchmarks and recommend targeted improvements. However, the analysis also underscores a major limitation: the lack of standardized and reliable data across countries significantly undermines the model's applicability and interpretability. The authors conclude that without international harmonization of health data reporting practices, even the most advanced evaluation models cannot yield credible or actionable insights for pandemic management.

Keywords: Data Envelopment Analysis (DEA), Unified Efficiency, Pandemic Response, Decision Support Systems, Health Policy Evaluation, COVID-19

Cite this Article as: Radoslaw KAPLAN and Piotr LEBKOWSKI Vol. 2025 (13) "Conceptual Framework of a DEA-Driven Decision Support System for Pandemic Response " Communications of International Proceedings, Vol. 2025 (13), Article ID 4537525, https://doi.org/10.5171/2025.4537525