

# **Composite Index Creation Using AHP: Efficiency Optimization for the Health Care Industry**

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## **Abstract**

The growth of the health care industry, both in medicine and administration, increases the awareness of determining the efficiency of the services, utilities, and performance. The objective of this paper is to present a conceptual creation of an index that will quantify the efficiency of centers in the health care industry.

The creation of a composite index to measure the health care industry's efficiency simplifies both internal and external decisions made for specific centers. It will aid in defining the optimal amount of hospitals that will fulfill the health care needs of designated areas. The indices allow for appropriate comparisons between hospitals or clinics, respectively, and their effectiveness on all levels of functionality. The Analytical Hierarchy Process is the methodology incorporated in the creation of the composite index. It is an eigenvector method of calculating priorities which the majority of researchers have found to be a superior methodology for the weighing of a composite index.

The index integrates sub-indices that are aggregated and weighted to determine the overall efficiency. This method is evaluated using the local health care industry in Windsor, Canada.

## **Keywords**

AHP, analytical hierarchy process, efficiency composite index, health care industry, index creation, optimization, eigenvector

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## **Biography**

**Andrea Irina Yzeiri** is currently a full-time undergraduate student studying at the University of Windsor. She is currently studying to complete two bachelor degrees in Honours Business Administration concentrating in Operations Management and an Honours Political Science degree with a specialization in Law and Politics concurrently with an undergraduate thesis. Ms. Yzeiri has worked on community improvement research projects including We\$ucceed: Beyond the Status Quo and Public Policy Internship Pilot in Windsor-Essex. She is the president of the Outstanding Scholars Student Council, an honours association at the University of Windsor aimed to develop research opportunities for undergraduate scholars.

**Dr. Fazle Baki** is a Professor in the Odette School of Business in the University of Windsor, Canada. He graduated in Civil Engineering from Rajshahi University of Engineering and Technology (RUET) in 1987. He received MBA degrees from the University of Dhaka, Bangladesh in 1991 and the University of New Brunswick, Canada in 1995. He received a Ph.D. degree in Operations Management from the University of Waterloo, Canada in 1999. His research interest lies in the development and application of quantitative methods in business and industrial engineering. He is particularly interested in the combinatorial problems that arise in manufacturing, supply chain management, and healthcare management.