Healthcare organizations strive to identify and carry out improvement initiatives to sustain their businesses and gain competitive advantage. However, it is not feasible to conduct all improvement projects simultaneously due to limitations in time, capital, and personnel. An effective prioritization and selection approach is valuable in that it can assist the organization to optimize its available resources and outcomes. This study attempts to enable such an approach by developing a framework to prioritize improvement opportunities in healthcare through the integration of the Fuzzy Delphi Method (FDM) and Fuzzy Interface System.

To carry out the evaluation process, the framework consists of two phases. The first phase utilizes FDM to identify the most significant criteria that should be considered in healthcare for electing the improvement projects. The research identifies potential factors for evaluating projects, then utilizes FDM to capture expertise knowledge. The first round in FDM is intended to validate the identified list of factors from experts; which includes collecting additional factors from experts that the literature might have overlooked. When an acceptable level of consensus has been reached, a second round is conducted to obtain experts’ and other related stakeholders’ opinions on the appropriate weight of each factor’s importance. Finally, FDM analyses eliminate or retain the criteria to produce a final list of critical factors to select improvement projects.

The second phase in the framework attempts to prioritize improvement initiatives using the Hierarchical Fuzzy Interface System. The Fuzzy Interface System combines the experts’ ratings for each improvement opportunity with respect to the factors deemed critical to compute the priority index. In the process of calculating the priority index, the framework allows the estimation of other indices including: social, financial impact, strategical, operational feasibility, and managerial indices. These indices bring an insight into the improvement opportunities with respect to each aspect.

Major: Industrial Engineering

Educational Career:
Bachelor's of Electrical Engineering, BS, 2011, United Arab Emirates University
Master's of Engineering Management, MS, 2014, University of Central Florida

Committee in Charge:
Ahmad Elshennawy, Chair, Department of Industrial Engineering and Management Systems
Luis Rabelo, Department of Industrial Engineering and Management Systems
Gene Lee, Department of Industrial Engineering and Management Systems
Mohammed Darwish, Department of Industrial and Management Systems Engineering, Kuwait University

Approved for distribution by Ahmad Elshennawy, Committee Chair, on November 30, 1999.

The public is welcome to attend.