

Proceedings of the 1st Annual World Conference
of the Society for Industrial and Systems Engineering,
Washington, D.C, USA
September 16-18, 2012

Selection of an Ideal Enterprise Integration Strategy Using Delphi-ANP Decision Making Approach

Tridip K. Bardhan and James Ngeru

Department of Industrial and Systems Engineering
Morgan State University, Baltimore, Maryland 21251, USA

Corresponding author's Email: tridip.bardhan@morgan.edu

Author Note: Tridip K. Bardhan is the Chair of the Industrial and Systems Engineering (ISE) Department at Morgan State University, Baltimore, Maryland. James Ngeru is working as an adjunct faculty at the ISE Department of Morgan State University. As a part of Dr. Ngeru's dissertation, this research is funded by ERG Grant # UNV2009-EMG-1611.

Abstract: The need for today's organization to be competitively effective and agile has led to an explosive interest in the field of enterprise integration (EI). Numerous organizations have already implemented EI while others are still juggling with such initiatives. Despite the growing interest in this field, there is still no clear methodology that guides stakeholders in identifying an ideal EI approach that would optimally address most of their organization's business and technical integration needs. Therefore, the objective of this paper is to present formulation and demonstration of such a methodology through a case study. As selection of an EI approach can be viewed as a complex multi-criteria decision making problem, involving several stakeholders with varying preferences and who must gauge a set of business and technical factors to appraise different EI approaches, a multi-criteria decision methodology that blends in both Delphi technique and analytic network process (ANP) method is applied. ANP is favored in this case as it is relatively easy to implement and offers a comprehensive structure that enables extensive analysis of multiple decision elements and their interdependence effects on each other. Delphi technique is blended in ANP framework to facilitate pooling of group inputs and bring a sense of consensus in the decision making process. The formulated methodology is then applied in a state government agency that is involved in implementation of an enterprise-wide integration. From the case study, the importance of consideration of all-encompassing organizational factors was evident. The results from the case study reveal disparity of preferences towards the evaluation goal and criteria among different stakeholders. However, the use of the proposed methodology helped in assimilating stakeholders varying view-points, and hence a sense of group unanimity.

Keywords: Enterprise Integration, Delphi technique, Multi-criteria Decision Analysis, Analytic Network Process.