

## ABSTRACT

Adoption and implementation of Enterprise resource planning (ERP) systems are plagued with low rates of success (approximately 60 to 70% of the systems fail to deliver the intended benefits). Two primary reasons may be attributed to the low adoption and implementation success of these systems: (1) mismatch of the adopted ERP system with the organizational processes and (2) non-existence of tools and techniques for management of adoption and implementation lifecycle.

In this information era, armies around the world are adopting network centric operations with an aim to creating a strong and flexible network linking various combat elements with operational logistic elements to speed up the pace of warfare and to get more combat power. Accordingly, Indian Army also is attempting to integrate the functions of its operational logistics with combat elements through adoption and implementation of service oriented architecture based ERP systems.

While evaluating the adoption and implementation of ERP systems in Indian Army, the author has identified the need to evaluate all the choices to identify a flexible system which with minimum customization shall help it achieve a 'strategic-fit'. Apart from that, through a thorough literature survey, the author has identified the need to develop a method to measure the ERP adoption success on a real time basis throughout the ERP adoption and implementation lifecycle; to develop an index for real time continuous assessment of ERP adoption; to investigate whether this real time ERP adoption success index is capable of controlling the ERP adoption and implementation lifecycle; and to attempt a multi-location ERP adoption and implementation using real-time ERP adoption success index in the context of Indian Army. The objectives of the thesis are laid out accordingly with these considerations in mind.

The author has developed an easy-to-use evaluation methodology for in-house evaluation of all available choices of ERP systems using the Fuzzy AHP methodology. The same was used

to identify the system most appropriate for adoption of service oriented architecture based ERP system in Indian Army.

The author has developed a measurement model for any ERP-adopting enterprise to measure the adoption and implementation success throughout the ERP adoption and implementation lifecycle. The development of measurement model was based on ERP adoption and implementation study in five Indian multi-location enterprises. ERP adoption and implementation success was measured using key performance indicators of all four strategic perspectives of Balance Scorecard (BSC). The key performance indicators were identified using expert opinion, which were continuously assessable and quantifiable throughout the ERP adoption and implementation lifecycle.

A novel adoption and implementation success index (AIS index) was developed to measure intermediate benefits and overall benefits to the enterprise due to adoption and implementation of ERP system. Intermediate benefits to the enterprise are modeled using key performance indicators of BSC depicting core operations of the enterprise. Overall benefits to the enterprise are modelled using industry wide accepted financial perspective parameters. Fuzzy extent analysis has been used to integrate the values of key performance indicators and the financial perspective parameters into an AIS index.

ERP adoption and implementation lifecycle management is done by measuring the adoption and implementation success at pre-fixed measurement points and comparing it with the benchmarked values. A template for measurement and comparison with benchmark values for multi-location ERP adoption and implementation in Indian Army after 12 months has been given in the thesis.

**Key Words:** ERP system evaluation, ERP adoption and implementation success, ERP lifecycle management, Fuzzy AHP.