AN ALTERNATIVE METHODOLOGY FOR SELECTING ENTERPRISE RESOURCE PLANNING (ERP) SYSTEMS IN A TYPICAL ARCHITECTURE/ENGINEERING/CONSTRUCTION (AEC) COMPANY

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Abstract
Adopting a proper Enterprise Resource Planning (ERP) system is a crucial investment that usually involves massive resources and can significantly affect the future competitiveness and performance of an organization. Current research focuses on fragmental evaluation of the choice of an ERP. This paper presents an alternative method for selecting ERP systems for an Architecture/Engineering/Construction (AEC) company. The Analytic Network Process (ANP) technique under a Technology-Process-Culture (TPC) paradigm proposed in this paper is an original approach to explore the complicated IT system selection within the AEC sector. TPC ensures that the selection is based on a holistic perspective. The decision theory ANP is employed in TPC to analyse the dependence between selection criteria. An analytic framework is constructed and a step-by-step application procedure of the framework is specified to provide detailed guidance for ERP system selection, which can help the organisation to set up a consistent evaluation process and framework for facilitating a complex IT system selection. An empirical example is given for demonstrating the feasibility of the proposed model.

Keywords
Enterprise Resource Planning (ERP); IT innovation; Selection; Analytic Network Process (ANP); Technology Process Culture (TPC); AEC industry

INTRODUCTION

Businesses have realised the importance of innovation for survival in a world of global competition (Porter, 1990; Michie and Smith, 1998). A recent European Commission report (European Commission, 2001) declares ‘Innovation is now the single most important engine of long-term competitiveness, growth and employment.’ As one of the important categories of innovation, Information Technology (IT) innovation is broadly defined as innovation in the organisational application of digital computer and communication technologies (Swanson, 1994). IT innovation continues to have a significant impact on the Architecture/Engineering/Construction (AEC) sector. In order to survive and succeed in today’s knowledge-based economy, companies of any size, public or private, from leaders to start-ups, increasingly feel the need, and the pressure, to develop strategies to release ‘added value’ that can be gained from the effective adoption and implementation of IT innovation (Issa, Flood et al, 2003). IT innovation adoption is a selection process by which an organisation defines a problem to be solved, searches for IT-based solutions, and finally makes choices from the various available options. Central to the process is the decision-making for the best option. Decision-making is the very foundation of an enterprise, and a sound decision-making of IT adoption is imperative for gaining and maintaining a competitive advantage. However, how to make the right decision...