



SUMMARY

JOKO RATONO. The Development of Enterprise Resource Planning (ERP) Selection Methodology Using Delta Model. Supervised by KUDANG BORO SEMINAR, YANDRA ARKEMAN and ARIF IMAM SUROSO.

Enterprise Resource Planning (ERP) is one of the most popular integrated applications software technology in doing business in the world to support the organization's operations and management services across business functions and departments. ERP system emphasizes business transformation that leads to change business processes in an effort to maximize company profits. Nevertheless, MPI Group (2012) and Gartner (2013) study shows there are still many companies that do not use ERP yet and have a plan to adopt ERP, various companies in the Eastern Europe and Asia-Pacific countries as well as small-medium companies in European and USA.

Based on KPMG survey in 1997, ERP project failure reached 61%, and in 2008 decreased to 51% (Leung 2008, Ghosh 2012). Panorama (2013) reported that 40% of ERP projects still fail. One cause of failure is improper package selection (Ghosh 2012), in the selection was not identified unique and critical process (Ramco 2005), the failure of selection affects implementation failure (Phusavat *et al.* 2009, Gupta and Kumar 2012). Initial scope of the project and during its implementation were accounted 32.4% over-budget and 16.7% project delays (Panorama 2012b).

Several studies on critical success factors (CSF) also showed the importance of ERP systems selection carefully and included in one of the CSF (Forsslund and Jonsson 2010, Al-fawaz *et al.* 2010, Sanchez and Bernal 2013). ERP selection is a complex decision making process (Munkelt and Volker 2013) on the ERP system itself, vendors / consultants, adoption of best practices, customization of company's unique practice, alignment with company strategy and should involve employees from the beginning (Allen 2005). Selection systems that do not fit (Verville and Halington 2003) and ineffective (Lall and Teyrachakul 2006) can be a major cause of failure of ERP systems which is a critical investment, risky, expensive (Brown 2006) and affect the performance, profitability (Molnar *et al.* 2013) and a competitive advantage in the future (Bakas *et al.* 2007). Many companies take this important decision without proven methodology of selection (BDC 2013), whereas the selected ERP system contribute significantly to the success or failure of ERP implementation (BSM 2010, Yang 2010), a positive or negative effect on ROI (BDC 2013) and selection criteria also affects the success of the ERP (Tsai *et al.* 2012, Jayawickrama and Yapa 2013).

Rayner and Woods (2011) from Gartner defines ERP system as part of the organization's strategy and ERP selection methodology should include alignment criteria to the company's strategy (Unal and Guner 2009, Vorst 2012). The development of the ERP system must reflect a competitive advantage of the company (Beard and Summer 2004, Uwizeyemungu and Raymond 2012).

This study was conducted to explore an important criteria in the selection of ERP including alignment of strategy with the delta model strategic theory approach, the quality of software and the quality of use with reference to the latest international quality standard ISO25010 (ISO/IEC 25010 2011), developing a

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methodology PADS with the delta assessment process phase to sharpen analysis for the unique and critical processes, using theoretical of delta model strategy and an alternative quantitative approach, Triangular Fuzzy - Neural Network (TFNN) and Triangular Fuzzy - Genetic Algorithm (TFGA) on the important criterias, as the ERP selection methodology with qualitative and quantitative approaches.

The results of this study confirm that PADS methodology is a proven ERP selection methodology that was validated by ERP expert and has been simulated by a food company. The strategic theoretical of delta model becomes a perspective and literature review reflecting the company's strategy in adopting ERP through PADS methodology component. The fit strategy is the most three important criteria after software product quality (ISO25010) and ERP vendor-consultant. Result of PLS path analysis shows the fit strategy can reflect the selection criteria and delta model can reflect the approach. The qualitative survey also confirm the delta model gets a positive feedback as a very good and complete strategic theory for ERP selection.

Focus and special attention to the uniqueness of the process, that is a competitive advantage of the company, becomes an important process in the delta assessment, one of the stages in the PADS methodology. The results of the model validation for methodology through PLS path analysis, delta assessment provide the highest reflection among the four phases.

Model of PADS methodology for ERP selection, the hybrid of qualitative and quantitative approach by presenting alternative tools TFNN and TFGA. TFNN and TFGA in component of approach-tools give the high reflection. Together with the delta model, contributing 25% as a component of the PADS methodology. On PLS path analysis, ERP software product quality criteria (ISO25010) and quality of use of ERP (ISO25010) can reflect as the component of the selection criteria. Together with the selection factors for vendor and consultants, fit strategy, change management and cost contribute 75% of PADS methodology formation.

Keywords: Delta Model, ISO25010, ERP Selection Methodology, Triangular Fuzzy-Genetic Algorithm (TF-GA) , Triangular Fuzzy-Neural Network (TF-NN).

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