

Measuring the Effect of Customization in Influencing the Success of ERP Implementation

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Abstract– In implementing ERP, customization sometimes can not be avoided due to the need of filling up the gap between organization requirements and ERP package. Even though many studies suggested minimum customization, the amount of allowed customization is still remained unclear. This study proposes a measurement framework to investigate the relationship between ERP customization and ERP implementation success level. The measurement is performed by employing correlation analysis between the degree of customization (DOC) and ERP implementation success level. Beforehand, the measurement of DOC is carried out using the complexity matrix while the implementation success level is assessed through the dimension of satisfaction, individual impact, organizational impact and intended business performance improvement. This measurement framework is expected to be able to explain whether the customization has positive impact, no correlation or negative impact to the ERP success level, but it cannot be used to detect the change of success level when there is the change in degree of customization. However, the measurement result can be utilized to estimate the range of allowed customization level.

Keywords – ERP implementation, customization, correlation

I. INTRODUCTION

Competitive business environment is endlessly forcing business organizations to find the more effective and efficient operation. Organizations are continuously re-adjusting and re-aligning their operation to be more outward looking, market-oriented and knowledge driven [1]. Integration becomes the key factor to support this condition. Integration of all organizational mechanisms will support organization to take quick reaction to competitive pressures and market

opportunities [2]. Enterprise Resource Planning (ERP), with the ability to integrate and optimize business processes in corporation has been developed to answer this challenge [3]. Reference [4] explained that ERP works to integrate all corporate information in one central database, so that all information can be easily retrieved from any department. Reference [2] confirmed that implementing ERP is the most effective way toward traceability and enterprise integration.

In almost 20 years, ERP has been implemented and developed widely. Worldwide market of ERP packages was estimated as growing at an annual growth rate of 4.8% and may exceed \$21 billion in 2010 [5]. In 2006, ARC Advisory Group was calculating that total ERP market was \$18.4 billion and the annual growth of the market was predicted in the level of 6.7 %. Based on that prediction, they estimated that by 2011 the value of the market will reach \$24 billion.

Even though ERP sounds promising, its implementation project is not a trivial issue. In information systems development perspective, ERP implementation project is different from a traditional system implementation. References [3,6] noted that ERP implementation is closely linked to the change in business process in organization. According to reference [7], ERP implementation leads the organizations to change the way they perform their tasks. Moreover, ERP project is a risky project for an organization. From the economic point of view, it is high cost and hard to estimate the project. This complexity has attracted academicians to do research in this area. It was found that 40% of 313 ERP research articles published from 2000-2006 contain the explanation of ERP implementation [3].

Generally, ERP implementation project consists of many complicated tasks to accomplish. Those complicated tasks, in some cases, leads to failure of ERP implementation. Reference [8] reported that 70 percent of all ERP projects fail to be fully implemented even after three years. According to reference [9] after reviewing 134 articles, there are 26 categories of critical success factors related to ERP implementation. It implies that there is no single reason for ERP success or failure.

Based on that review, it was found that only a few past researches tried to associate the success of ERP to the technical factor, particularly customization. In fact, customization is something crucial to fill the mismatch between enterprise needs and ERP system [10]. Reference [9] clarified that the basic version of ERP with no or minimal customization is a category of ERP critical success factors. While another reference [11] recommended the limit of customization level to guaranty the success of ERP implementation.

Although reference [11] recommended the maximum amount of 30% customization as the limit for ERP implementation, with an inadequate explanation, the level of customization is still a non-representational thing. In other word, it still leaves a question about how the customization of ERP can influence the success of its implementation. This question needs to be answered to get a more complete view of ERP implementation. Further study to investigate the relationship between ERP customization and the success of ERP implementation is considered a necessary action. Moreover it is also necessary to find out how far that ERP can be customized without significant impact to the implementation success.

II. ERP IMPLEMENTATION& ERP CUSTOMIZATION

A. ERP Successes and Failures

Despite ERP implementation has been investigated for long time, definition of ERP success or failures is still vague. Many studies discussed the critical success factors of ERP implementation without sharply defined the condition of ERP success. However, some alternatives can be considered in categorizing the level of the success ERP implementation. For example, reference [8] explained ERP implementation can be categorized as complete success when everything goes off without a hitch; partial success when there are few alignment problems resulting minor inconvenience or minor downtime; partial failure when there are tenuous of adjustment process that creating disruption in daily operation; and complete failure when the project was scuttled before implementation or failed so miserably that the company suffered significant long-term financial damage.

Other reference [2] explained the success of ERP implementation by associating it to the benefits of the ERP system. It explained that when ERP is implemented successfully, it will give some benefits to the company. Those benefits are categorized to 5 groups as follow:

- Operational: cost reduction, cycle time reduction, productivity improvement, quality improvement, customer services improvement
- Managerial: better resource management, improved decision making and planning, and performance improvement
- Strategic: concerning business growth, supporting business alliance, building business innovation, building cost leadership, generating product differentiation and building external linkages
- IT infrastructure: involving building business flexibility, IT cost reduction, increased infrastructure capability
- Organizational: supporting organizational changes, facilitating business learning, empowering and building common visions

IT

In different approach, elaborated from previous research, reference [12] proposed a measurement model of successful ERP Implementation which consists of four dimensions as follows:

- User satisfaction: the extent to which users believe that the information system available to them and meets their information requirements
- Individual impact: improved individual productivity, task performance improvement, decision effectiveness and quality, time to make decision.
- Organizational impact: related to organization's operating cost, overall productivity, customer service level, realization of specific ERP implementation objectives.
- Intended business performance improvement: predefine performance objectives of the ERP project including cost reduction, business process integration, time, cost, etc.

Basically, it can be said that ERP is successfully implemented if it can perform well in term of satisfying user, giving positive impact to both individual and organization to perform business activity and improving the particular business performance as planned.

B. ERP Implementation Model

Since the company structure and business process vary from one to another, implementation characteristics also differs. It depends on the characteristic of the organization and the ERP itself. References [13] explain the implementation characteristic by following criteria:

- Physical scope
- BPR scope
- Technical scope
- Module implementation strategy
- Resource allocation scope

All these characteristics are then simplified by reference [14] into the measurable variables as shown in Table 1.

