A Research Model for Measuring ERP Performance

Yang Suk Kang[a], Soon Goo Hong[b], Hyung Rim Choi[c], and Jong Weon Kim[d]

[a]Department of MIS, Dong-A University
840 Hadan-dong, Saha-gu, Busan, 604-714, Korea, E-mail:kangyangsuk@gmail.com

[b]Department of MIS, Dong-A University
840 Hadan-dong, Saha-gu, Busan, 604-714, Korea
Tel: 82-51-200-7488, Fax: 82-51-200-7481, E-mail:shong@dau.ac.kr

[c]Department of MIS, Dong-A University
840 Hadan-dong, Saha-gu, Busan, 604-714, Korea
Tel: 82-51-200-7488, Fax: 82-51-200-7481, E-mail:hrchoi@dau.ac.kr

[d]Department of MIS, Dong Eui University
San 24 Gaya-Dong 995, Eomgwangno, Busan Jin-Gu, Busan, 614-714, Korea,
jokim@dongeui.ac.kr

Abstract: The overall objective of this paper is to suggest the research model for measuring the ERP performance in Korean manufacturing firms. To this end, the previous research papers on the ERP measurement were reviewed and the 356 questionnaires are collected. In particular, the effects of mediation variables including a firm size, user satisfaction, and usage will be tested.
Keywords: ERP; Organizational Performance; Manufacturing firms

1. Introduction

Much academic research has been done on the reasons for ERP implementation and the challenges of the implementation project itself. However, most of the research on ERP implementation is in the form of personal experiences or case studies and empirical research addressing ERP implementation issues is rather limited (Duplaga and Aslani 2003), especially for the ERP implementation in Asia. In addition, the evaluation of ERP systems should be approached differently from the way of measuring a single unit information system, because the ERP is an enterprise-wide system that integrates separated departmental systems such as accounting, human resource, production, marketing and decision making. Therefore, this study is intended to suggest the research model for measuring the impact of ERP on the organizational performance in Korean manufacturing firms based on the BSC (Balanced Scorecard) model.

2. Literature Review

Since the purpose of this study is to measure the impact of ERP on the organizational performance, it would be meaningful to review previous research which introduced various measurements for the influence of ERP on firms' performance. Although there is no unified and agreed upon way to measure the

performance of ERP, most previous studies can largely classified into financial and non financial measurement studies.

Table 1 summarized the papers of ERP performance measurement.

Table 1. Summary of ERP Performance Measurement

Measurement Type	Studies	Items used	
Financial	Nicolaou (2004)	• Return on invested capital (ROA, ROI, ROA) • Ratios on profitability (ROS, OIS) • Expense ratios (CGSS, SGAS) • Utilization ratio (ES)	
	Hunton et al. (2003)	• ROI • ROA	• ROS • Asset turn over
	Hitt et al. (2002)	• labor productivity • ROA • inventory turnover • return on equity • profit margin	• asset turnover • account receivable turn over • debit to equity • Tobin's q (market value/book • value)
	Poston & Grabski (2001)	• SG&A • COGS	• RI • Number of employees
Non Financial	Gattiker & Goodhue (2004)	• increased coordination • customer commitment • accountability	• self-discipline • coordination among sub-units
	Zviran (2003)	• Customer Satisfaction • contents • format	• timeliness • accuracy • easy of use
	Roseman & Wiese (1999)	• Balanced Scorecard • financial • customer	• internal • innovation & learning

3. Research Model

Several studies on ERP performance measurement discovered that there is a positive correlation with the ERP implementation and a firm's performance in Korea. However, this result may be biased because most researchers surveyed large companies that may show great performance in Korea. Hence, the following hypothesis is suggested.

H1: The ERP implementation at the SMEs will improve an organizational performance.

Large companies have a standardized process and a high synergy effect by sharing information with many staffs comparing with SMEs. Hence, to grasp a difference of ERP performance between the two groups, the following hypothesis is formed.

H2: The firm size will affect organizational performance as a mediation variable

Delone and McLean (1992) asserted that a user satisfaction is used frequently as the indicator of IS success. The reason is that if a user is not satisfied with a system, he or she does not want to use it resulting in the failure of a newly developed system. However, most studies until now are dealing with the system implementation own and the correlation with a performance without any consideration of user satisfactions. An organizational performance can be affected by a user satisfaction and/or a usage of ERP. If a user does not use the ERP or use only partial module because of a lack of user training and a complexity of system, the ERP implementation effect falls short of expectations. Hence, to analyze empirically the relationship between ERP usage

and/or the user satisfaction and organizational performance, a following hypothesis is formed.

H3: User satisfaction of ERP will affect organizational performance as a mediation variable

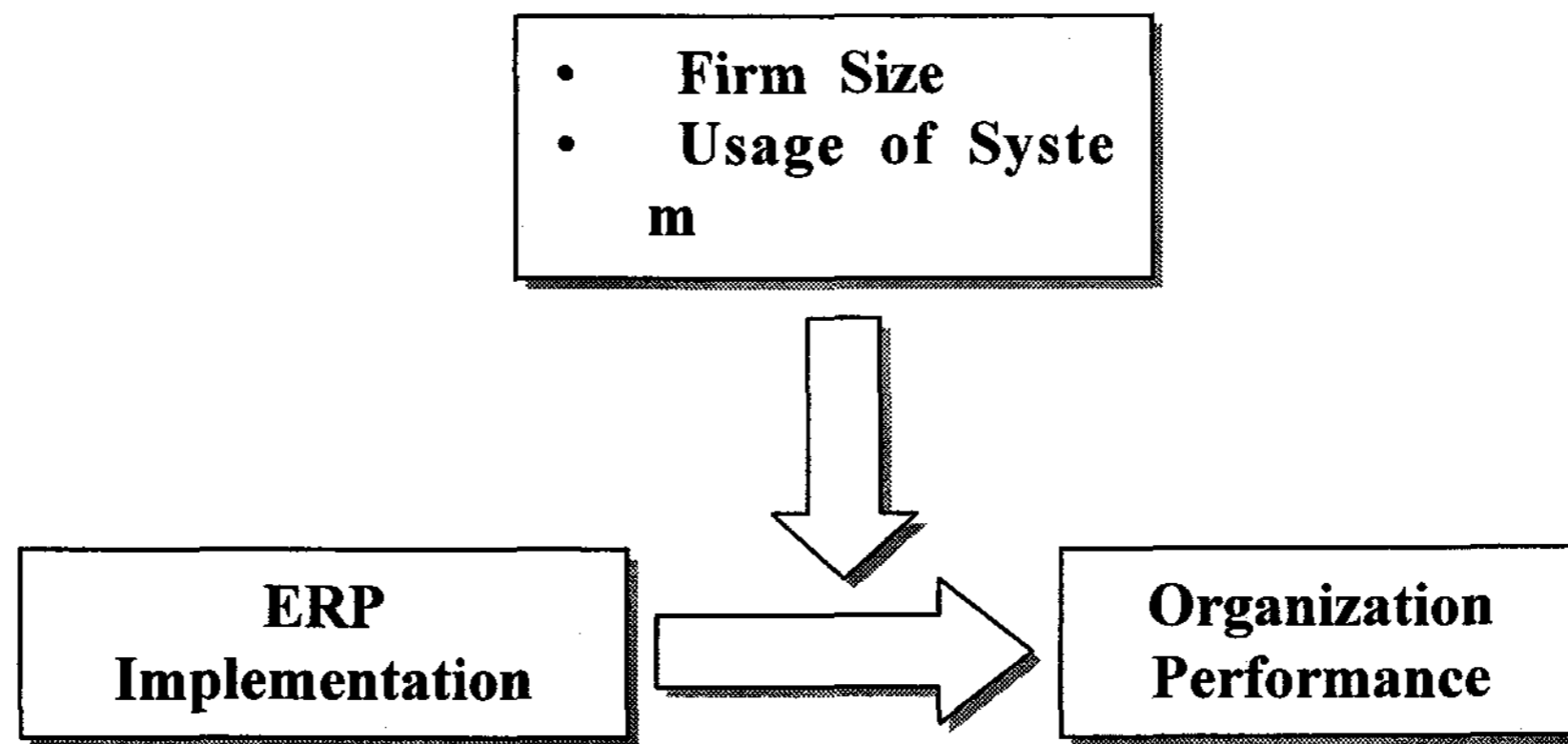**H4:** Usage of ERP will affect organizational performance as a mediation variable

Figure 1. Research Model

4. Data Collection and Analysis

The questionnaire was collected through both the e-mail and the web. Of the 350 questionnaires e-mailed, 59 (16.9% response rate) were returned. In the web survey, the questionnaire was administered by the Pollever Research Center – a leading market research company in Korea (www.pollever.com). Through the web survey totally 393 responses were collected. However, 37 responses included incomplete data. Thus, total of 356 usable questionnaires are collected. The validity and reliability test will be carried out and then the hypotheses will be tested.

5. Conclusions and Current Status

The overall objective of this study is to examine the relationship between the use of ERP and organizational performance of Korean manufacturing firms. In addition, the effects of several mediation variables will be tested. The research is currently in the data analysis phase.

References:

The references are available on request.