

## The effects of e-business on organizational performance

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### ABSTRACT

Information technology plays an important role in increasing organizational cooperation both inside an organization and among different firms. In fact, many organizations have shared information through the recent advances of information technology and they have been able to increase the performance of their organizations, significantly. In this paper, we present an empirical study to investigate the relationship between e-business and intra and extra organizational cooperation. The results indicate that e-business directly increase intra organizational performance, indirectly increase organizational cooperation. Extra organizational performance directly increase organization performance, inside cooperation also indirectly influence inside cooperation through extra organization cooperation.

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## 1. Introduction

During the past two decades, the advances on information technology (IT) have changed e-business, substantially (Bailey & Rabinovich, 2001; Takeishi, 2002). Prahinski and Benton (2004) report IT could improve communications inside and outside the organizations and it could improve the performance of the firms. Any supply chain management is established through a good communication among various vendors and customers (Narasimhan & Jayaram, 1998). There is no doubt that sharing information among various organizations can help them access better production, inventory management and distribution planning (Kearns & Lederer, 2003). The exchange of information among various firms for making imminent decisions only possible through the recent advances of IT (Mabert & Venkataramanan, 1998), which makes it possible business process reengineering (Grover & Malhotra, 1997). Bharadwaj (2000) presented a resource-based perspective on information technology capability and corporate performance in an empirical investigation.

We et al. (2011) investigated two important issues associated with e-business. The first one was on what capabilities impact a company's capability to establish e-business success and perform better, where firm-level e-business success is evaluated using e-business service capability and IT-enabled

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collaborative advantages; and the second question was related to whether the two ways of measuring e-business success yields in various effects on organizational performance. The survey studies whether a firm's application abilities of e-business integrated systems development and systems usage is positively associated with a firm's overall e-business success, which yields to a positive impact on organizational performance.

The survey gathered data from 152 Chinese manufacturing companies and their B2B e-business systems participants to test various theoretical hypotheses. The findings implied that both systems development and systems usage had significant and positive impacts on e-business service capability. The finding could be translated into the important role of a firm's application capability of e-business on e-business success. They also discovered that IT-enabled collaborative advantage maintains relatively more significant and greater impact on organizational performance.

Wu and Chen (2006) presented a hybrid method for measuring the performance of e-business investments in high-tech manufacturing. The method uses other measures in addition to financial figures to measure the performance. The study used an integrative performance measurement system with a three-level structure of organizational hierarchy including corporate strategies, manufacturing decisions, and operational activities. Various levels of performance measures were investigated over various periods and the model was verified by survey data. The results showed that time tag had positive influence on the performance measures of corporate strategies and that they were significantly correlated with operational activities.

Today, web-based applications have made tremendous changes on the face of economy and it has created many business-to-business models, which was not possible to have three decades ago (Sengupta, 2001). Koellinger (2008) investigated the relationship among technology, innovation, and firm performance in an empirical investigation from e-business in some European countries.

Koellinger collected the necessary information using a sample of 7302 European enterprises. The results indicated that Internet-based technologies played important role on innovation in the year 2003 and the results also indicated that all studied types of innovation, including Internet-enabled and non-Internet-enabled product or process innovations, were positively correlated with turnover and employment growth. They reported that companies, which rely on Internet-enabled innovations will more likely to grow as firms depending on non-Internet-enabled innovations. Finally, the research revealed that innovative activity was not necessarily correlated with higher profitability and they explained some possible reasons.

Wu and Lu (2012) investigated the relationship between CRM, RM, and business performance for real-world case study of hotel industry in Taiwan. They reported that implementing CRM has a significant and positive impact on the RM effect, positively influencing business performance for both hotels and B&Bs. However, the Internet service and customer support functions of the CRM strategy are the basic sources of impact on the RM influences and business performance, whereas for B&Bs, the marketing support function of the CRM strategy alone impacts the RM factor and business performance. To achieve higher performance, the different types of hotel enterprises should incorporate their main competitive advantage before implementing key CRM strategies.

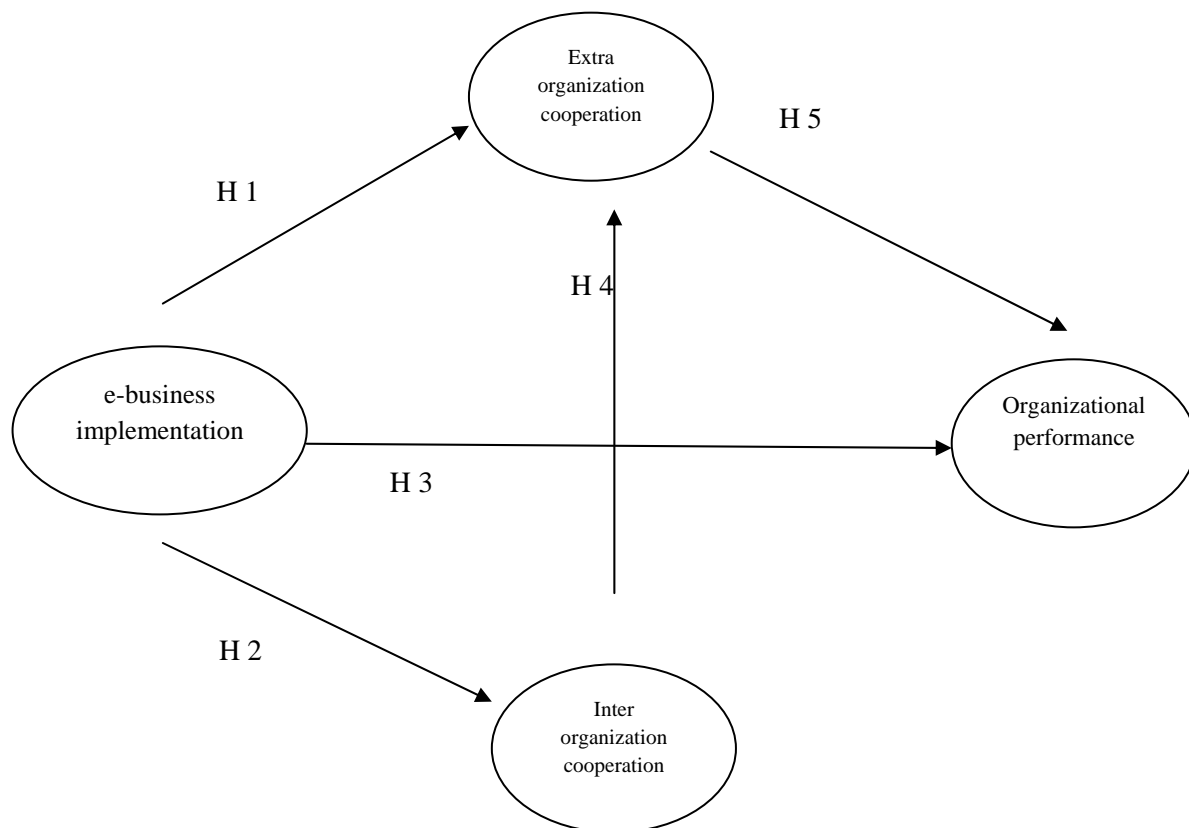
Bremser and Chung (2005) presented a conceptual model for performance measurement in the e-business environment. The primary aim of the paper was to present a framework for developing performance measurement metrics in the e-business environment using balanced scorecard methodology with existing taxonomies of e-business models. Kim et al. (2008) investigated the effect of strategic positioning on firm performance in the e-business context. They reported that innovative differentiation strategies together with technological resources could strongly influence firm performance in the e-business context, a context where there is considerable turbulence in technological development.

Trkman et al. (2010) studied the impact of business analytics on supply chain performance and their finding suggested a significant relationship between analytical capabilities and performance. The moderation effect of information systems support is substantially stronger than the impact of business process orientation. The findings provide a better understanding of the areas where the influence of business analytics may be the most important one.

The proposed study of this paper investigates the effects of e-business on organizational performance through share information and cooperation among various firms. The organization of this paper first presents details of our survey in section 2. Section 3 explains details of our findings and concluding remarks are given in the last to summarize the contribution of the paper.

## 2. Proposed study

The proposed study of this paper studies intra and extra organizational cooperation on the performance of the firms. Fig . 1 shows the relationships among different components



**Fig. 1** Structural framework of the proposed study

According to Fig. 1, the proposed study investigates the following five hypothesis.

1. E-business has direct positive effect on extra organizational cooperation.
2. E-business has direct positive effect on intra organizational cooperation.
3. E-business has direct positive effect on organizational performance.

4. Inter organization cooperation has positive effect on organizational performance through intra and extra organizational cooperation.
5. Extra organization cooperation has positive and direct effect on organizational cooperation.

The proposed study was implemented among all industrial units in one of industrial clusters located in a city of Hamedan, Iran. There are 240 managers working in the city. Therefore we could use the following formula to calculate the minimum number of sample size,

$$n = \frac{N \times z_{\alpha/2}^2 \times p \times q}{\varepsilon^2 \times (N - 1) + z_{\alpha/2}^2 \times p \times q}, \quad (1)$$

where  $N$  is the population size,  $p = 1 - q$  represents the yes/no categories,  $z_{\alpha/2}$  is CDF of normal distribution and finally  $\varepsilon$  is the error term. Since we have  $p = 0.5$ ,  $z_{\alpha/2} = 1.96$ ,  $\varepsilon = 0.05$  and  $N = 240$ , the number of sample size is calculated as  $n = 149$ . We have considered the following items when we chose a factory,

1. The firm must be equipped with computer, internet and fax facilities,
2. The firm must have maintain an active website,
3. The firm must have used information technology equipments during the past five years.
4. The firm must be active in procution.

In our survey, there were 105 men and 43 women, where 26 maintained a 2 years colleague education, 95 had bachelour degree and 27 of the survey people hold master degree.

Cronbach Alpha (1951) for e-business implementation, intra orgaizational cooperation, extra organizational cooperation and organizational performance were calculated as 0.778, 0.802, 0.845 and 0.768, respectively.

### 3. The results

The questionnaire was designed on Likert based scale (Likert, 1931) and they were analyzed using regression tests. Table 1 shows details of our analysis.

**Table 1**  
Details of the regression analysis

Variable	Unstandardized coefficients B	Standardized coefficients Beta	t	Sig.	Std. Error
E-business implementation	.219	.714	0.303	3.27	0.15
Intra cooperation	3.08	.097	0.201	3.39	0.36
Extra cooperation	4.35	0.34	0.251	2.09	.04
Organizational performance	6.24	.087	0.92	1.79	.029

Based on the results we can conclude that e-business directly influence extra organizational activities when the significance level is five percent. In other word, the more we use e-business, the better we

could communicate with other organizations. The other observation is on the effect of e-business on intra-organizational effects. The results of our survey indicate that e-business, indeed, that the null hypothesis of having no relationship between e-business and intra organizational effects is rejected when the significance level is five percent. The other hypothesis was the relationship between e-business and performance of an organization. According to our survey, we can reject the null hypothesis of having no relationship between e-business and the performance of an organization is rejected under a 5% level of significance, leaving us to conclude that there is a meaningful relationship between e-business and performance. Finally, the last hypothesis examines the effect of e-business on performance via intra and extra organizational factors, which has been confirmed in our survey.

#### 4. Conclusions

In this paper, we have presented an empirical investigation on the effects of e-business on different factors affecting the performance of the firms. The present study distributed a questionnaire among some decision makers and gathered their feedback. The results indicated that e-business directly increase intra organizational performance, indirectly increase organizational cooperation. Extra organizational performance directly increase organization performance, inside cooperation also indirectly influence inside cooperation through extra organization cooperation.

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