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Perceived absorptive capacity of individual users in performance of Enterprise Resource Planning (ERP) usage: The case for Korean firms☆

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Abstract

We examined the effect of absorptive capacity of users on their use of ERP in a Korean context. The three components considered were understanding, assimilating, and applying ERP knowledge. We found that the capacities of users to assimilate and apply the knowledge had both direct and indirect effects on its value. The users' ability to understand ERP knowledge was found to influence its performance by their assimilating and applying the knowledge. We also found that organizational support moderated the relationship between their absorptive capacity and performance.
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1. Introduction

In order to deal with a rapidly changing external environment and overcome the limitations of legacy systems, many companies have implemented Enterprise Resource Planning (ERP) systems. Unlike 'function-oriented' systems that support only specific business activities, ERP systems are intended to integrate company-wide processes by adopting good reference models from efficient firms [63]. Hence, implementation of an ERP system can be regarded as a process of knowledge transfer of best practice from leading companies. Despite this, however, users often have difficulty implementing an ERP system, since it is difficult to understand the operational logic in the unfamiliar modules. This is the primary reason why organizations need to spend a substantial effort in convincing its employees of the practical value of ERP systems and educating them in their proper use [10]. Lack of attention to this is probably why so many implementations have failed to perform as expected [29].

The effective transfer of knowledge between knowledge sources and recipients requires direct and intimate interaction between them [19,28]. However, it is virtually impossible for recipients of ERP systems to

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engage in direct interaction with sources, so that the systems embody the task-related and process-related knowledge of world-class leading companies [38]. Accordingly, it is critical for a recipient company to be able to absorb the leading-edge knowledge embedded in ERP systems: a firm's absorptive capacity can be determined by the aggregation of its members' capacity [15].

Despite this, with the exception of Ko et al. [34], few studies have paid attention to the effects of individual users' capacity on their ERP performance. Ko et al. demonstrated that individual users' absorptive capacity played a significant role in knowledge transfer from ERP consultants to members of a recipient organization. They argued that official training and education was not sufficient to have all the ERP users become sufficiently familiar with ERP systems to use them effectively. Accordingly, we assumed in our research that users' absorptive capacity was the individuals' idiosyncratic capability that would help improve individual performance and eventually increase organizational competency. In other words, we argued that individual (or organizational) performance could be enhanced when users reinvented their use of ERP to fit to their task environment and thus that such reinvention would be tightly related to users' ability to learn to use ERP systems effectively.

We believed that all the knowledge to be transferred in the context of successful ERP implementation was not explicit. Nor could it be externalised. Practices embedded in ERP packages are explicit knowledge that users must understand. However, knowledge involves applying expertise, and creating, sharing and distributing it [2,7]. Users often ask for customization when their tasks and business processes are different from those of the standardized package; indeed, this is one reason why so many ERP installations fail. Thus, consultants' technical and users' business knowledge sometimes collide.

Knowledge transfer from social network (peers and working groups) is also an important factor for successful adoption and use of ERP systems. ERP users are often unwilling to change to the ERP mode of operation. We believe that ERP knowledge has many diverse aspects, including positivistic/anti-positivistic and constructive aspects, and the affordability of such aspects in an organization is susceptible to the status of the absorptive capacity of ERP users.

The purpose of our research was to examine the effect of users' absorptive capacity on their performance when using ERP. We therefore describe an individual user's absorptive capacity as three components (for

understanding, assimilating, and applying the knowledge in the ERP system) and suggest that organizational support can moderate the relationship between them and his or her ERP usage. Hence, our research questions are:

- What are the dimensions of an individual user's absorptive capacity?
- What are the causal relationships between them? And
- Is there any moderator determining or affecting the influence of each dimension of an individual user's absorptive capacity on his or her task performance?

2. Literature review

2.1. ERP implementation

We conducted a thorough literature review of critical success factors in successful ERP implementation (see Table 1). The studies included user training and education as one of the major critical success factors; they were considered especially important during the middle phases of the implementation process (adaptation and acceptance) [39,56]. User learning occurred during education/training and conversations with ERP consultants, colleagues, and IT champions. We investigated how and why ERP users digest this diverse knowledge.

2.2. Absorptive capacity of ERP

Many studies have examined the effect of an organization's absorptive capacity on organizational performance, including the adoption of new technology [45], the transfer of technological knowledge [49], the development of new products [57], and organization learning [36,37]. Boynton et al. [8] asserted that a firm's absorptive capacity provides the theoretical basis for comprehensive understanding of its usage of IS. Zahra and George [65] suggested that absorptive capacity was an important factor for an organization to implement new IS successfully and organization-level prior knowledge and management support were both critical.

Individual users' absorptive capacity, however, does play a significant role in the knowledge-transfer process. Cohen and Levinthal defined the absorptive capacity as the ability of an organizational member "to value, assimilate, and apply new knowledge." Mowery and Oxley [43] conceptualized absorptive capacity as a broad set of organization member "skills needed to deal with the tacit component of transferred knowledge and