



A multilevel explanation of end-user computing satisfaction with an enterprise resource planning system within an international manufacturing organization

Tor J. Larsen ^{1,*}

Department of Leadership and Organizational Management, Norwegian School of Management, Nydalsveien 37, 0442 Oslo, Norway

ARTICLE INFO

Article history:

Received 9 July 2008

Received in revised form 3 May 2009

Accepted 18 May 2009

Available online 11 June 2009

Keywords:

Multilevel theory

Determinants

Project objectives

Computer aided instruction (CAI)

End-user computing satisfaction (EUCS)

Enterprise resource planning

Middle managers

Super-users

ABSTRACT

The present research results assume that end-user computing satisfaction (EUCS) of an enterprise resource planning system (ERP system) depends on users' positive perception of determinants on multiple organizational levels. Hence, rather than investigating a precise theory of narrow focus, this research addresses the users' view of the impact of major project and organizational issues on EUCS. This requires a multilevel approach to research. A hierarchical regression analysis based on data from 123 middle managers and super-users from a single company with operating units in 10 western European countries confirmed this theory. Still, a path analysis suggests that determinants representing the near user environment (communication and decision-making patterns between users and experts locally during the ERP system implementation process, and communication with peers in organizational units other than that of the respondent) contribute more consistently to EUCS than determinants on other organizational levels. User training plays a role in helping users understand the relevance of ERP system project business objectives, but training does not help in explaining EUCS. The study points to future research in the areas of instrument development as well as an increased understanding of stakeholders' views, determinant definitions, relationships among determinants, and measures of ERP system outcome.

© 2009 Elsevier B.V. All rights reserved.

1. Introduction

Large, international, manufacturing organizations spend considerable resources on purchasing, tailoring, implementing, and using standard software packages. These packages are often substantially tailored to meet specific business requirements, thereby becoming strategically important to the user organization [1]. A prime example of this class of a standard package is enterprise resource planning (ERP) systems. Typical objectives of ERP system projects are standardization and integration of key business processes across the value chain and the creation of a platform for integrated and enhanced managerial planning, control, and analysis [2–4]. However, the employment of a state-of-the-art standard software package, albeit tailored, is not a guarantee of success [5–11].

Some argue that the necessary prerequisite for success is that the ERP system is actually taken into use. However, use alone is not a sufficient criterion for success; it also requires that users are of the opinion that the system supports their jobs. In keeping with the

old axiom that “the proof is in the eating of the pudding,” the users' perceptions of their own system and its use may be viewed as an appropriate representation of the larger IS success issue¹. The argument is that the users know best how well an information system works. Users make the interaction between an IS and work happen [12,13]. This reflection differs from studies building on DeLone and McLean's [14,15] success model (see for example [16–21]). The present research builds on users' perceptions of actual use, not intentions. A particularly common approach for measuring the users' perceptions of system use is by determining users' satisfaction with an information system (IS).

Previously published studies have contributed considerably to our understanding of user satisfaction as a measure of (ERP) system success. However, a scientific theory often addresses a narrowly and precisely defined relationship between a limited set of dependent constructs and its dependents. In practice, on the other hand, relatively many constructs and their causes and effects must be taken into consideration. The multilevel theory approach

* Tel.: +47 46 41 07 33; fax: +47 46 41 04 05.

E-mail address: Tor.J.Larsen@BI.NO.

URL: <http://www.infomgt.bi.no/larsen>

¹ The construct of success is complex and is defined in many ways (in addition to [14,15]; see for example [92]). Individual as well as organizational determinants have been investigated (e.g. [93]). Truly, many factors affect the outcome of using large, complex information systems (IS) innovation projects [94–96].

is particularly suited to addressing aspects of the multi-faceted reality of practice [22]. Within this umbrella, multiple independent and dependent constructs and variables can be included in a single research design.

Yet, working with too many new elements in one research effort is risky business. Glaser and Strauss [23] suggest that one particularly appropriate way of moving research one step forward is to expand the research in one specific area, keeping everything else as similar to the previous research design as possible. In the present research, the dependent construct is defined as being user satisfaction—a construct that is commonly used in (ERP) system research and which also has been thoroughly tested. With regard to independent constructs², our study adopts the multilevel approach by asking: “What determinants across organizational levels explain users’ satisfaction with an IS?” Quite commonly used is a “mixed determinants” research design in which the independent determinants are derived from many organizational levels and the dependent construct is a single construct, such as users’ satisfaction with an IS ([22], Figure 1.1, p. 39). The additional aspect added in the present research is that it is “international”—across multiple subsidiaries in many West European nations. Our first research question (RQ1) reads:

RQ1. In an international setting, what are the multilevel determinants that explain users’ satisfaction with an ERP system?

As expressed in Animal Farm, “All animals are equal but some animals are more equal than others.” ([24], p. 114) That is, organizations customarily define some aspects of an undertaking as more important than others. Objectives are looked upon as a tool for guiding employees in understanding key aspects and outcome [25]. In the setting of an ERP project – as in very many similar undertakings – important aspects and outcomes are expressed as ERP project business objectives. Thus, paralleling the Animal Farm slogan, users may not perceive that all determinants explaining ERP systems success are equally important. Indeed, they may not look upon the role of objectives in the intended positive manner. Within the umbrella of RQ1, the following additional research question is formulated:

RQ2. As perceived by users, what is the impact of ERP project business objectives on users’ satisfaction with an ERP system?

The article proceeds with background and propositions. Next the consideration of methods is presented which leads into analysis. This is followed by Sections 5 and 6.

2. Background and propositions

It is documented that users’ perception of salient determinants and their satisfaction with an IS vary considerably across the lifecycle of an ERP system [16–18,20,21]. Consider the following: one may think that making success of the initial implementation effort is the platform for a positive outcome in later lifecycle phases. However, the problem with focusing on the initial implementation effort (also called the *change anchor phase*) is that the obtained data will be influenced by the novelty effect of the new innovation [26]. In the present research setting, relatively stable levels of user perceptions of determinants and satisfaction with the ERP system are required. In this regard, our research differs from that of Robey et al. [27], where knowledge assimilation during ERP system implementation was the focus. The present study defines its place within the (ERP) system lifecycle as an early usage phase where some time has elapsed since the system was implemented. However, ‘time since implementation’ must not

have passed to the degree where users may have developed a perceptual distance from, or have actually forgotten, implementation issues.

This section proceeds as follows: First, multilevel determinants in an early usage phase are discussed. Second, material pertaining to the users’ perception of ERP system success is presented. Third, the role of business objectives in an ERP project is explored, and fourth controls are discussed.

2.1. Multilevel determinants

From the viewpoint of the organization, investment in an ERP system is a wilful action [28]. A commonly found objective is the specification of how business processes, deemed strategic to the organization as a whole, should be carried out in a standardized manner across local as well as international organizational units [29–31]. Different levels of the organization will initiate a range of actions with the aim of facilitating the use of an ERP system [32–35]. However, users do not mechanically adapt organizational commands, but exhibit individually initiated learning processes [36–38]. The users’ expectancy of outcome may influence actions taken and the degree of learning [39]. However, the users’ perception of the relevance or quality of implementation elements that they experience themselves may influence their perception of success.

Hence, within large international manufacturing organizations, ERP projects require the combined effort of at least three organizational levels [40]. First, it is customary to find an ERP project anchored within a headquarters-based IT department. The tailoring of the application is most likely undertaken here for subsequent diffusion into subsidiaries. One also finds that the headquarters IT department carries the responsibility for developing implementation plans in subsidiaries and developing concrete user-training programs [27,41–43]. The headquarter IT department also carries the responsibility for ERP system version upgrades and maintenance. Second, subsidiaries are responsible for the execution of implementation tasks and the environment within which use of the application occurs (but under the guidance of headquarters developed plans and controls). In the implementation process, a subsidiary will use local expertise as well as headquarters personnel in collaboration with users [44–49]. Third, within each subsidiary, employees take advantage of their own work environment and their own IS experiences as they become ERP system users [50–55]. Hence, candidate determinants are many and complex, representing actions on the organizational levels of headquarters, subsidiaries, and local individual work environments.

In summary, an ERP project naturally includes many determinants. However, users may not be in a position to form reliable perceptions about them. For example, the ERP system purchase process is most probably undertaken at headquarters, remote from the daily work lives of its future users. Hence, users will not have in-depth insight or knowledge about the purchase process. More subtly, users may be engaged, as is customary, in an ERP system tailoring process; however, only a very limited number of users would be involved [56]. The majority of users are exposed to a new system during its implementation. In the present research, our focus is to study perceptions among the general ERP system users, not the chosen few who are directly engaged in the standard package tailoring processes. Robey et al. [27] present strong evidence that the configuration of teams, careful management of consulting relationships, and user training has an impact on knowledge transfer. Although an organizational level study, the determinants of these three functions might have relevance in the present research setting. An overview of organizational levels and candidate determinants is presented in Table 1.

² In multilevel studies independent variables are labeled ‘determinants’—the latter being the term employed hereafter.

متن کامل مقاله

دریافت فوری ←

ISIArticles

مرجع مقالات تخصصی ایران

- ✓ امکان دانلود نسخه تمام متن مقالات انگلیسی
- ✓ امکان دانلود نسخه ترجمه شده مقالات
- ✓ پذیرش سفارش ترجمه تخصصی
- ✓ امکان جستجو در آرشیو جامعی از صدها موضوع و هزاران مقاله
- ✓ امکان دانلود رایگان ۲ صفحه اول هر مقاله
- ✓ امکان پرداخت اینترنتی با کلیه کارت های عضو شتاب
- ✓ دانلود فوری مقاله پس از پرداخت آنلاین
- ✓ پشتیبانی کامل خرید با بهره مندی از سیستم هوشمند رهگیری سفارشات