

Modeling ERP Academic Deployment via AST

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INTRODUCTION

Many educators and industry leaders believe industry-academic collaboration can change learning processes and improve learning outcomes by providing opportunities and resources not otherwise attainable (Sikkel, Spil, & van de Weg, 1999; Wohlin & Regnell, 1999). In the case of deploying advanced information technologies (AITs; e.g., computer-aided software engineering tools, enterprise resource planning systems, and database tools) via industry-academic collaboration, each institution's culture and unique organizational objectives influence collaborative relationships. The challenge in these relationships is to facilitate mutual understanding and clarify distinctions in addressing each organization's goals. The aim of these relationships is the appropriation of AITs in a manner that enriches educational experiences while meeting industry needs.

There are many quandaries associated with this phenomenon. How does the deployment of AITs within the educational curriculum facilitate the educational process? To what degree should these resources be utilized in education? What tools and methods should be used to deploy these resources? What should the role of the AIT vendor or consultant be? Can academic independence be maintained within a strong industry collaborative relationship?

Without a framework that identifies relevant variables, it is daunting at best to begin to assess the impact of varying degrees of adoption, identify effective processes of deployment, and move toward assessing costs and benefits. Though some frameworks address industry-academic collaboration (Mead, Beckman, Lawrence, O'Mary, Parish, Unpingco, et al., 1999), none have considered the implications of AITs on the evolution of interinstitutional collaborative relationships. This exposition discusses a framework seeking to address this need. The framework proposes a theoretical model for understanding the forces at work when integrating AITs into educational settings (LeRouge & Webb, 2002).

We begin our discussion by introducing adaptive structuration theory as the foundation for the industry-academic AIT collaboration framework (DeSanctis &

Poole, 1994). We then introduce constructs and relationships related to industry-academic collaboration within the context of enterprise resource planning (ERP) systems.

BACKGROUND: THEORETICAL FRAMEWORK - ADAPTIVE STRUCTURATION

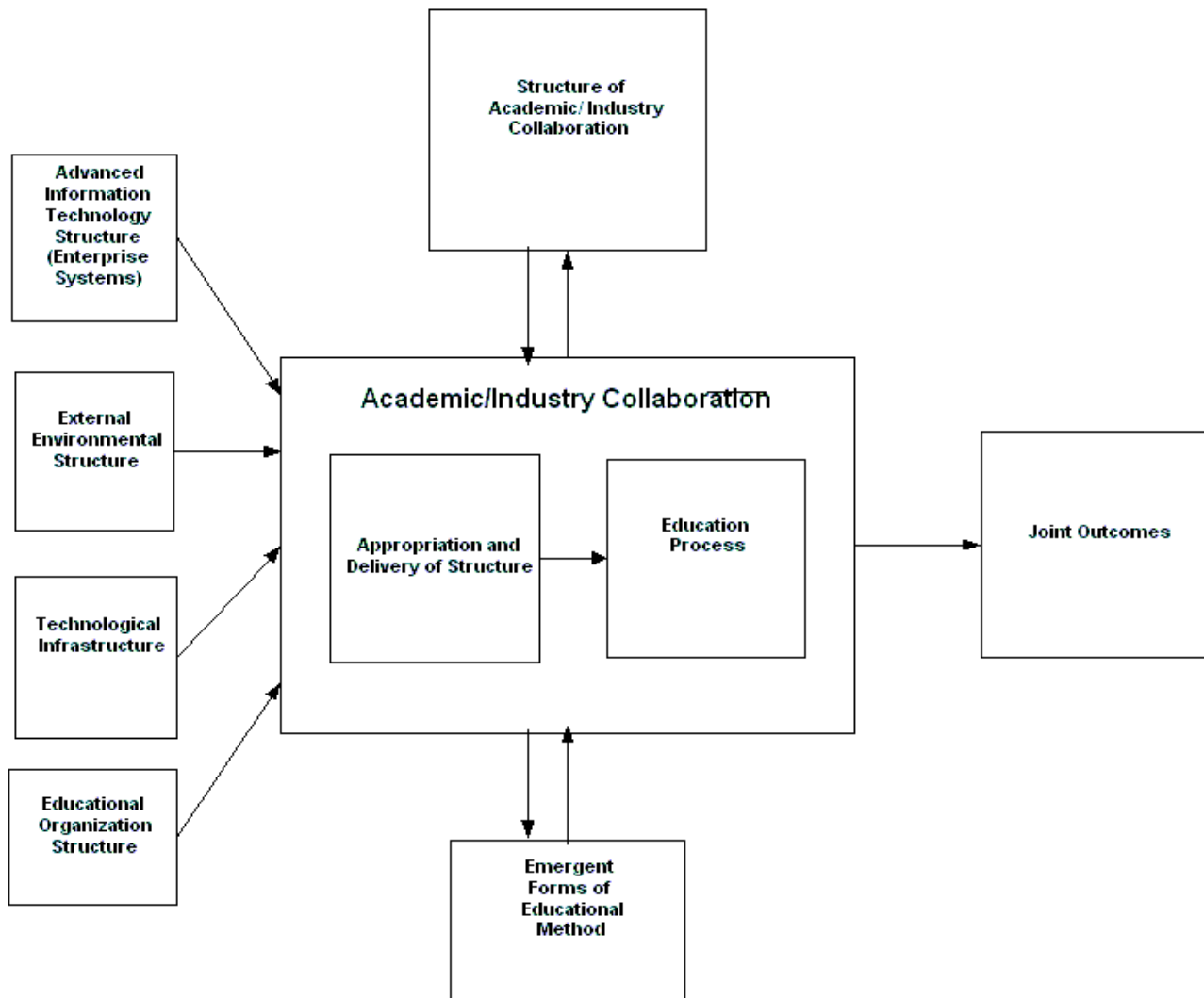
Adaptive structuration theory (AST), an extension of structuration theory, has been used as a framework to study organizational change processes when advanced technologies are adopted. Adaptive structuration is a sociotechnical perspective that introduces human actors and organizational context as moderators of the impacts of technology (Gopal, Bostrom, & Chin, 1993; Poole & DeSanctis, 1992). This perspective posits that the adoption of an advanced technology is a process of organizational change that results from the mutual influence of technology and social processes.

It is our premise that in an academic setting, human actors and organizational context are moderators of the collaborative process in which AITs are appropriated as each entity strives to fulfill its own needs. Such dynamic processes have an effect not only on the outcome of the appropriation, but also on the evolution of the relationship between industry and academia. As the number of academic institutions adopting AITs increase, we feel AITs will serve some groups better than others.

We introduce the framework's components in the context of ERP systems adoption in academe. We exemplify ERP systems within the specific context of colleges of business for a number of reasons: market demand, level of commitment required, interdisciplinary functionality, and level of system sophistication. The level of commitment and potential impact implied by the magnitude of ERP systems suggests that the study of ERP systems in business colleges may be associated with a considerable effect size detectable in future research efforts.

Our model of the constructs and relationships is represented in Figure 1. Model constructs and attributes are summarized in Table 1.

Figure 1. Adaptive structuration theory applied to industry-academic collaborations involving AITs (adapted from DeSanctis and Poole, 1994; LeRouge & Webb, 2002)



ADVANCED INFORMATION TECHNOLOGY STRUCTURE

Two ways have been suggested to describe the contributing social structures offered by an AIT. The first, “structural features,” refers to the types of rules and resources offered by the system. The second, “spirit,” can be thought of as the intended purpose and utilization of the system (DeSanctis & Poole, 1994).

With respect to technology spirit, there is a natural gap in appropriation between business use and academic use of ERP systems. The spirit of ERP systems can be described as information technology structures designed to integrate operational-level transaction processing, multilevel decision support, and strategic management of major corporations. However, the goals of ERP use in

colleges of business are primarily educational and exploratory in nature, often focusing on discipline-related subsystems. This gap in system goals and values may have implications for academic-industry collaboration.

With regard to structural features, ERPs are a comprehensive suite of applications that support diverse organizational functions and processes. The suites developed by major ERP vendors commonly contain more than 15 modules, each of which is geared toward a different industry process and requires a significant training investment. For example, SAP offers some certification programs requiring over 40 days of classroom training. Accordingly, ERP systems challenge colleges with a level of sophistication that affords flexibility in feature set and appropriation, but requires substantial training to achieve acceptable performance.

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