



Matching indirect procurement process with different B2B e-procurement systems

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Abstract

A single information system cannot meet all the business requirements, and not all e-procurement systems for the procurement of indirect goods are equally suitable for supporting different business processes throughout their distinct phases. Companies need to adopt different e-procurement systems or business models in a hybrid and seamless manner. Existing literature addressing e-procurement systems or business models have focused on the indirect procurement at high-level granularities only or at a low-level granularity only, either within a single e-procurement system or without matching between procurement processes and different e-procurement systems. In this paper, we provide the matching between indirect procurement process and different e-procurement systems, at both the high-level and low-level activities, for identifying and articulating the areas where various e-procurement systems can be utilized in a hybrid and seamless manner. The output of this paper can help companies adopt various e-procurement systems or business models and redesign their e-procurement processes.

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1. Introduction

Corporate procurement can be broadly divided into the procurement of direct goods (i.e. direct procurement) and that of indirect goods (i.e. indirect procurements). Direct goods are the materials that are used in the production of manufactured goods. Indirect goods are the supplies a company uses in day-to-day operations, but not in the manufacturing of goods. These include office supplies and equipment, MRO (maintenance, repair and operation), computers,

software and other IT equipment, marketing kits and services, travel reservations and other services, as well as capital goods.

Traditional emphasis of the procurement function has been on direct procurement [6,9,17,26,55,57]. Considered of strategic relevance, many efforts have been made to streamline the inflow of direct goods onto the manufacturing floor and to increase the efficiency of structured procurement processes. Direct procurement can be scheduled in a timely manner to meet demand, provided sufficient information about demand is available, and sources of materials are secure and reliable. Besides establishing routine buying procedures, IT (information technology) has long been utilized in this context. In particular at large

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organizations, EDI (electronic data interchange) applications have provided the basis for JIT (just-in-time) arrangements and automated replenishment systems. Buying operations are typically triggered through demand forecasting, and stipulated in BOM (bill of materials), and manifested in MRP (material requirements planning) or ERP (enterprise resource planning). The production and distribution of direct goods in collaboration with suppliers and business partners is termed SCM (supply chain management). Many computer applications have been developed for supply chain and production management.

Compared to direct procurement, indirect procurement had received far less attention on an organizational level and the use of IT, resulting in little process standardization and a majority of paper-based activities. Historically, indirect goods have been procured manually via phone, fax, and traditional mail. Only with the advent of affordable, often Internet-based applications, did companies become aware of the time and cost saving opportunities in this area, with the result of numerous reengineering and e-procurement projects [5,17,20,22].

In simplest terms, e-procurement is commonly defined as an organization's procurement using the Internet technologies. In contrast to direct procurement systems, e-procurement systems concentrate on indirect procurement. E-procurement systems are well suited to support and automate indirect procurement in new and many ways, which can yield significant efficiencies, time and cost savings at all levels across an enterprise, resulting in self-service transactions for end-user purchasing and empowerment, and reduced maverick buying.

There is a tremendous amount of literature on e-procurement systems or business models. Among them, the literature addressing e-procurement systems along with procurement processes have focused on the indirect procurement *at high-level granularities only* (e.g. [2,4,7,8,15,16,19,23–25,27,35,37,39,43,44,46–50,54,60]) or *at a low-level granularity only* (e.g. [3,9,17,30,31,36,41,42]), *either within a single e-procurement system/business model or without matching between procurement processes and different e-procurement systems*.

However, a single information system cannot meet all the business requirements, and not all

e-procurement systems or business models for indirect procurement are equally suitable for supporting different business processes. That is, one size does not fit all. Therefore, a buying company needs to adopt various e-procurement systems or business models in a hybrid and seamless manner. But one of the difficulties is to find, deploy, and utilize the right solutions to the right places. In this paper, we provide the matching between indirect procurement process and different e-procurement systems, at the high-level and low-level activities, in order to identify and articulate the areas where various e-procurement systems can be utilized in a hybrid and seamless manner.

2. Procurement processes

While there is generally consensus on what a business transaction is all about and whom it involves, the approaches to delineate their sequence show some variety. As with any definition, the task largely depends on the research objective and perspective that is taken. In the literature, procurement transaction processes have been generally defined along two different ways.

Many academic researchers provided similar process models at higher-level granularities as shown in Fig. 1 (e.g. [2–4,7,8,15,16,19,23–25,27,35,37,39,43,44,46–50,54,60]). Among them, the most representative model is a four-phase model (information, negotiation, settlement, and after-sales) extended from the three-phase model provided by Schmid [48]. Gebauer and Scharl [16] reviewed the literature on the transaction process models, and depicted a figure showing an overview and contrasts between them (from 1* to 6* in Fig. 1). In this paper, we extend the Gebauer and Scharl's figure by adding the last two models (i.e. 7* and 8* in Fig. 1) and with more references than those by Gebauer and Scharl.

Those models can be well suited to conceptualize the transaction processes between the buyers and suppliers of e-marketplaces as well as the internal activities of the buyers at a high-level granularity. However, they do not make a distinction between contracted buying and off-contracted buying processes, and need additional work for the process decomposition or matching their distinct phases

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