

# Decision-making factors for effective industrial e-procurement

Ya-wen Yu\*, Hsiao-Cheng Yu, Holly Itoga, Tyng-Ruu Lin

*Institute of Management of Technology, National Chiao-Tung University, 1001 Ta-Hsueh Road, Hsin-chu 300, Taiwan*

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## Abstract

For companies to remain cost-competitive in the market, they must reduce the costs of their components and materials by sourcing from least-cost suppliers. One method to achieve this is through open bidding via the Internet using a scheme called “reverse e-auction.” In this article, an in-depth literature review was carried out, followed by interviews with experts in procurement departments. This helped us to understand and evaluate the major concerns of companies that have already adopted an e-procurement system. Findings from our research may offer guidelines and more potential sources that can be utilized in strategic planning for buyers and suppliers, as well as enhancing companies’ e-procurement policies. © 2008 Elsevier Ltd. All rights reserved.

*Keywords:* Reverse e-auction; Supply chain management; Procurement; B2B procurement; Supply sourcing

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## 1. Introduction

The Internet is a powerful tool for enhancing operational effectiveness. As companies strive to use Internet technology to improve their marketing processes, the fast-growing B2B e-procurement segment has become a popular purchasing medium that automates procurement [1], tracks shipment status, and manages payments that can be made in an online environment [2]. Companies such as TSMC, UMC, and Formosa Plastic Group in Taiwan have a long history of using e-procurement as a competitive strategy, which allows the purchasing staff to shift from administering a procurement process to managing tools that automate many steps in the highly intense, manual sourcing process [3]. Since the purchasing is done online, companies may now better utilize automated purchasing processes and negotiation mechanisms for their procurement operations [1]. Online auctions are used not only to reduce the time-to-market product life cycle, but they also allow companies to purchase in volume and negotiate lower prices by comparing vendors’ prices worldwide and eliminating unnecessary procurement costs. Savings average from 5% to 15%, procurement costs benefit by 70%, and cycle time is lowered by 50% [4–8]. Since 1999, Motorola has used Ariba’s e-procurement software tool to successfully conduct its business with more than 21,500 users representing 309 locations in 19 countries. In another example of e-procurement going mainstream, Nestles, Renault, and Schlumberger have joined e-Marketplace [9,10].

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\*Corresponding author. Tel.: +886 3 5731657; fax: +886 3 5726749.  
E-mail address: [yoyawin.mt91g@nctu.edu.tw](mailto:yoyawin.mt91g@nctu.edu.tw) (Y.-w. Yu).

## 2. Methodology

We began with a literature review, followed by interviews with professionals in procurement departments. We set up multiple interviews with procurement experts from high-tech companies in the Hsin-chu Science Park. We sought a better understanding of the drivers and drawbacks of the e-procurement system and online reverse auctions. In our research, the drivers and drawbacks of B2B e-procurement implementation are defined in order to understand why companies would or would not use B2B e-procurement as their purchasing tool. Multiple interviews were conducted to understand the steps for a more effective and feasible use of e-procurement. Our goal was to recognize and understand the drivers and drawbacks so as to gain a greater understanding of how e-procurement can be effective in planning strategies for participation in e-procurement programs.

## 3. The drivers

An increasing number of companies are interested in using an online e-auction as one of their purchasing tools. Consequently, we sought to identify the major drivers that influence buyers and/or the sellers in their decision to implement e-procurement. These drivers include:

- e-procurement as a cost-cutting tool;
- the opportunity for real-time bidding and response;
- the auction process is transparent;
- it reduces cycle time;
- it increases geographical outreach.

### 3.1. Cost-cutting tool

Since e-procurement can achieve gross savings of 5% to 40% [11] with a typical average of 15% to 20% gross savings [12], small firms gain a 15–25% reduction in prices in online marketplaces compared with those negotiated by the business itself [13,14]. e-Procurement systems are commonly used by senior managers to gauge the success of cost-cutting initiatives designed to maximize shareholder value [15,16]. Companies use e-procurement to reduce original procurement costs by approximately 5–10% through reverse auction and increased efficiency, which improves contract compliance, reduces cycle time, minimizes human errors, and results in better supply chain management. World Bank PREM notes state that e-procurement has generated numerous benefits, including enhanced transparency and public trust, and increased managerial efficiency [17].

Some key factors for the successful adoption of e-procurement are clear commodity specifications, large purchase lots sufficient to justify the involvement of a number of suppliers, appropriate supply market conditions, and an existing organizational infrastructure [18,19]. The e-procurement system opens doors to purchasing networks for suppliers and buyers, expands the selection of products, and makes information more easily obtainable. e-Procurement also links a vast network of connections, and makes searching and contacting much more convenient.

### 3.2. Real-time bidding and response

To achieve a reduction in the cost of goods and services, e-procurement is seen as both a price-cutting tool for purchasing, and a system that allows repetitive and real-time bidding by multiple suppliers, which ultimately reduces purchasing cycle time. Carter et al. [20] describe buyers who have used e-procurement, and most agree that it increases levels of trust, provides greater access to supplier data, and decreases cycle times for suppliers. It strengthens connections in supply chain management, as everything is sorted out by computer, price benefits are efficiently decreased, and companies avoid unnecessary inventory [18,20,21]. It also helps negotiate better prices with suppliers, resulting in an average 5–12% price reduction and as much as a 20% reduction in costs [18]. Benefits are also realized by suppliers, including reductions in ordering and processing costs, reduced paperwork, improved cash flow, and reduced cost for credit control.

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