



Reverse electronic auction web tool for B2B



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ABSTRACT

The processes of reverse auctions have proved useful and beneficial to both businesses and governments. The development of software applications in the field of B2B represents a challenging task for emerging economies. This paper presents various concepts, design stages, development and implementation of a particular reverse auction solution. A website construction, namely www.almejor.com, is the result of private initiatives in conjunction with university workforce. The joint efforts resulted in an innovative application in the context of E-procurement. The tool ensures the existence of an effective channel to improve processes between suppliers and customers. This is a web-environment solution that facilitates management of purchases through reverse auction.

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1. Introduction

Economic globalization has led markets to find new tools so as to set up new businesses and so has promoted the introduction of new communication technologies that favor a transition process from traditional economy to electronic-based economies. In this context, the incorporation of ICT implies adopting an organizational redesign approach intended to change the traditional administrative techniques and replace them with other strategies that integrate knowledge and information systems.

The new tools and applications that result in enhanced connectivity, together with particular web relationships, are also changing the expectations of people, both as commercial consumers and as citizens. The influence of technological changes goes beyond the specific applications that merely improve governmental efficiency, also improving transparency and response capabilities. Information technology has a great potential to change power hierarchies and responsibilities as well as controlling governmental processes, private-sector organizations and citizens [1]. Critical factors to implement innovative processes based on e-commerce models include ICT acquisition by companies and the ability of human resources to work with such tools [2].

The impact of e-commerce as a driver of strategic decisions within the B2B (Business to Business) domain is well documented.

There is consensus about the influence of the Internet as a platform for the development of alternative/supplementary distribution channels [3]. In recent reports [4], namely América Economía Intelligente, a second part of studies about e-commerce in Latin America was published. These studies focused on the structural factors that determine the region's potential in terms of e-commerce. The potentiality of the whole region experienced an increase of 33% when compared to previous years, placing particular emphasis on economical growth, which requires improvements in aspects like technological adaptation, infrastructure, market volume, access to banking services and the strengthening of the local demand.

With the emergence of the Internet, and considering the impact of information and communication technologies on any market, many enterprises and public institutions have opened new opportunities for saving costs and increase efficiency supported by electronic-trading sites. In many organizations, procurement costs constitute a major part of the total costs. Buyers look for lower prices of goods and services, faster purchasing cycles, shorter order processing and fulfillment cycles as well as lower administrative costs. On the other hand, suppliers wish to have new distribution channels, a wider customer data base, and new means to increase sales, reduce excess inventory, and reduce the cost of goods/services for sale. The use of E-procurement applications is expected to provide these benefits for both buyers and suppliers [5].

Through the use of technological tools we will propose an e-commerce-based model, which will facilitate interaction and

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control through an electronic business portal (website). This portal is intended to develop commercial aspects and production services throughout a particular supply chain.

2. Background

E-commerce is the buying and selling of products or services through electronic means such as the Internet and other information-based networks. The application and use of e-commerce makes it easier for sellers to access tight segments of the market that are widely spread while buyers enjoy the benefits of having access to global markets with a bigger stock. This ultimately helps to improve the quality of products and contributes to creating new forms of business [6].

Commercial activities through electronic means have increased significantly since the spreading of internet services [7]. A great variety of commerce events are conducted this way, promoting the creation and use of novel tools such as the electronic funds transfers, the supply chain management, internet marketing, online transfer processes, electronic data interchange, inventory management systems and automated data collection. The role of supply management in organizations may have a direct impact on firm performance, especially in terms of cost reduction [8,9].

Electronic integration has caused dramatic changes in the definition of enterprises, e.g. the appearance of virtual enterprises whose ability to offer products for the market is defined to a large extent by its ability to organize and manage a business relationship network instead of relying on its ability to manufacture a product or offer a service.

The aforementioned electronic integration covers both the configuration of virtual enterprises and the generation of inter-organizational networks. This requires significant levels of trust between information systems and the convergent participation of several organizations (either virtual or not) to deal with a certain market [10].

Provided that the Internet is an effective channel for business, several suggestions have been made about the way in which enterprises should develop an e-commerce strategy.

E-procurement can then be described as the electronic integration and management of all procurement activities including purchase request, authorization, order, delivery and payment between a purchaser and a supplier [11]. E-procurement can then be viewed as e-processes within e-commerce [12], namely processes that define priorities, rules, interfaces and sourcing.

The application of models like e-procurement provides conditions to reduce transaction costs for organizations, including buyers and sellers. Initially, the first e-procurement tools were designed to facilitate the search of products in the Internet and to allow buyers to send their shopping orders by using electronic catalogs. Some of the advantages of e-procurement technologies include the following: improved information coordination with suppliers, lower transaction times, lower costs, higher flexibility, and better supplier integration [13,14]. Enterprises are increasingly considering procurement as a strategic-level concern for developing competitive advantages [15].

E-procurement encompasses a number of specific elements, including e-sourcing, e-coordination and e-communities [16]. E-sourcing includes forward and reverse electronic auctions and online bidding and tendering, which are also referred to as electronic requests for quotations or proposals [17]. In a reverse auction, multiple suppliers are vying for a single buyer, thereby decreasing prices, so that the supplier that had the lowest offer wins the auction [18]. In contrast, traditional auction usually involves a seller offering one or more items for sale while potential buyers compete with each others for purchasing an item of common interest [19]. During this type of competition,

the price increases until no buyer is willing to go any higher. Potential benefits of reverse auctions include: reducing direct costs, clearly establishing market prices, shortening cycle times and expanding aspects like reach, price visibility and market knowledge [20].

Increasing the use of e-procurement may improve the transparency and accessibility of tender opportunities and thus increase the participation of SME, contributing to the promotion of greater competition across a particular market as well as providing new sources of economic growth and employment. The implementation of this kind of solutions in the Latin-American context represents an innovative proposal [21] since governments and enterprises are promoting electronic hiring.

The national government procurement agency conducted a study that included 18 Latin American and Caribbean countries [22]. The evidence reported in this study indicates that Chile, Costa Rica, Argentina and Mexico bear top ratings in many aspects. Countries other than Jamaica, Grenada Antigua and Barbuda achieved scores above those associated to Basic Functionalities (including characteristics associated to front-offices, increased number of buyers, suppliers, and a unique record strategy that minimizes the risk of fraudulent transactions). This suggests that most countries already have interactive business portals. Colombia obtained a surprisingly low score regarding "Institutionalism and organization of acquisitions", particularly when compared to Colombia's high scores in other assessment aspects.

3. Proposed solution

Business-to-business (B2B) electronic reverse auctions appeared first in the mid-1990s and since then have dramatically changed corporate sourcing practices. This type of auctions has become an alternative way to procure goods and services among firms representing a widely applied business model for conducting B2B e-commerce [23].

The conditions required for success in reverse auctions are clear and comprehensive specifications of product or service, a purchase large enough to provide an incentive for the supplier to participate and appropriate supply market conditions and infrastructure [24]. A reverse auction should be considered a tool within the strategic sourcing process [25].

Based on research evidence, we created a business portal (website) that provides users with access to a sales channel in a quick and simple way. The portal allows users to interact with enterprises from all economic sectors, which represents a suitable solution within the whole buying and selling process with complete transparency and security [26].

Fig. 1 shows the portal's user interface. Fig. 2 illustrates a mental map of the application as a knowledge instrument that represents the functionality of the application.

Portal www.almejor.com is an electronic commerce channel that proves effective, profitable and capable of creating and addressing new commercial and saving opportunities as part of the production processes of enterprises. The portal also provides fair chances for everyone to access the same market opportunities, creating a state of perfect competition.

The portal is intended to improve performance regarding the following aspects:

- Providing a modern business platform that satisfies the needs of the business sector through the most suitable available technologies.
- Creating a modular technological solution that is interoperable [27] and distributable into layers, admitting multiple clients (interfaces).

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