Application and Research of Electronic Commerce in the Centralized Procurement of Large State-Owned Enterprises

Lang LUO¹,a,*  Yao LIU¹,b  Tao HU¹,c

¹Beijing University of Posts and Telecommunications, Haidian District, Beijing 100876, China

a luolang0111@163.com, bliuyao95@126.com, hutao666@vip.sina.com

* Corresponding author

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Abstract. With today's rapid development of Internet and computer technology, the development of the world economy must tend to be the trend of the economic information and networking, and at this time, electronic commerce based on the Internet came into being. In view of the practices of electronic commerce in the procurement aspect being currently more popular in the large state-owned enterprises, this paper mainly focuses on the application of electronic commerce in the centralized procurement of state-owned enterprises. This paper first introduces the centralized procurement mode and characteristics of electronic commerce, analyses the present situation of the application of the existing electronic commerce procurement, and based on this, makes a specific analysis and research of e-procurement platform construction and application, and finally discusses the trend of the application of e-commerce in terms of the procurement.

Introduction

In the present society, the rapid development of IT technology and Internet technology have changed the way of information processing, and have promoted the development of e-commerce. The e-commerce has changed the operational model of the traditional enterprises, that is, the enterprise supply chain management can be combined with e-commerce together, with the means of this information technology to solve the problems which existed in the past Enterprise procurement, so that it gained the favor of more and more enterprises. The e-commerce procurement system can obviously reduce the costs, enhance the rate of return on the investment, shorten the production cycle, and improve the enterprise's procurement management and supply chain management. Therefore, the information foundation of more and more enterprises is becoming solid, and the electronic commerce construction is necessary and feasible.

The Characteristics of Centralized Procurement of Electronic Commerce

The electronic commerce generally refers to the use of computer, network and information technology to carry out business activities. From a broad perspective, the electronic commerce is often considered as the electronic business activities, that is to say, it is referred to as the business activity through all the electronic information technology, including external and internal business activities of enterprises; in a narrow sense, it can be understood as the trading activity of goods and services which are carried out by means of the electronic information technology including Internet. For example, the official definition was given in the “Blue Book of Electronic Commerce of China” released in 2001: the electronic commerce refers to the business transaction completed though Internet. The electronic commerce discussed in this article refers to electronic commerce from a broad perspective.

The electronic commerce technology of procurement refers to online purchasing (online procurement), and it refers to any technology by which the enterprise or government organizations obtain goods through the Internet. It pays more attention to automation processes, organizational
purchasing power and opportunities for goods through the Internet. [1] It can be regarded as the e-commerce solutions established through the Internet in order to promote and integrate purchasing activities between purchasers and suppliers, so that it makes the whole activity streamlined and greatly improves the application of the technology. [2] The electronic commerce system of procurement is the perfect combination of e-commerce technology, procurement behaviors and procurement management, which can be used to solve the problems of traditional procurement work. The procurement method of the electronic commerce can be understood as the online procurement, which can be performed in the environment of e-commerce, and the basic process is to establish e-commerce platforms, networks on the bidding and contract management. [3]

Research and Application of Electronic Commerce

Development situation

In recent years, the small, medium-sized and large enterprises apply the electronic commerce very actively, and many enterprises establish their websites and carry out online transactions because e-commerce can make multi-channel complex commodity trading become fast, simple and reduce transaction cost, simplify transaction process and improve the efficiency. [4]

The existing procurement models of each industry include the traditional procurement mode and the electronic commerce model of procurement. Among them, the procurement mode of electronic commercialization is divided into two kinds: the procurement platform established by enterprises themselves and the e-commerce platform of the third party. The procurement platforms established by enterprises themselves mainly serve for their own procurement so that it makes the procurement open, transparent and efficient, improving the procurement efficiency and reducing the procurement cost. The e-commerce platforms of the third party serve for the purchasing enterprises and suppliers such platforms as JingDong’s “ZhiCai”, “HuiCai” and “YunCai” and Alibaba 1688 procurement platform.

In large enterprises, the procurement is an important part of the cost control of the entire enterprise, which ensures the production and development of the enterprise, and has a direct influence on the benefits of the whole enterprise. Therefore, it is necessary to implement the electronic commerce, which can reduce the purchasing cost and also facilitate the control of an enterprise group.

The groups of large central enterprises first tried to carry out the electronic commerce in the procurement aspect. (1) In 2000, China Petroleum proposed the conception of electronic procurement, including strategic procurement, procurement process and technological environment of e-procurement. In 2010, China petroleum implemented the electronic procurement of the second generation. This implementation established a complete operation system for the procurement business, which was concerned about three aspects such as operation, management and decision-making. The procurement system takes the procurement and supply chain as the main line, which involves plan, bidding, contract, storage and logistics and etc. The operation system includes material, quality, price, management of suppliers and so on. (2) In 2010, the National Grid Corporation began to proceed with the establishment of e-commerce platform (ECP), in order to achieve the electronic procurement process. The platform connected the SoTower platform of the independent development with Ariba software to meet the demand of the intensive and electronic procurement for overall supplies of the Nation Grid Corporation. (3) China Nuclear Industry Construction Corporation has also initially realized the information management of bulk materials and the centralized procurement of key materials. (4) Shandong Coal Mine Machinery Equipment Co., Ltd. has two e-procurement solutions: the one is to use their own procurement website, and the other is to use the procurement network of the third party. According to the roles of different users and business permissions, they can read the website information, inquiry, quoted price and comparative price in order to carry out the related procurement operations, and according to roles and permissions, the website information among different roles should be strictly kept secret. (5) Baosteel Group has
also independently developed an electronic procurement platform called “Procurement Treasure” of specialization and sharing for manufacturing oriented enterprises.

**Function Analysis**

The basic functions of an E-commerce procurement platform include inquiry, order, category management and the whole procurement process of logistics and distribution which is completed to collaborate with suppliers. [5] The clients the platform faces include: enterprise procurement organizations, social purchasers, suppliers, service providers and operators of the third party. The main functional requirements include three aspects: bidding platform, online payment and big data analysis.

The procurement platform can be divided into three layers: business layer, operation layer and management layer, and the most important is the business layer. The specific module design is divided into the following:

- **Business Layer**
  - Display: supplier portal, purchaser portal, service provider portal, operating mechanism portal
  - Decision-making: decision analysis, management and control analysis, business statistics
  - Business Development: demand and planning management, procurement sourcing, order management, acceptance management, contract management, quality management, process control
  - Basic: category management, supplier management, expert management, price management

- **Operation Layer**
  - Operation management system, background management system

- **Management Layer**
  - Operational analysis system

**Analysis of Application**

The electronic commerce platform of procurement needs to be integrated with their other internal systems. There are mainly four items of work: The basic work is the master data management, which needs to be integrated with the existing master data management system of the group; secondly, it needs to be integrated with project management system, document integration system and so on in order to complete the information process including the relative project planning book and bidding book etc.; thirdly, it needs to be integrated with the contract management system, in order to complete the various elements of the procurement contract; finally, it is necessary to integrate with the central business system of the internal finance of a group so as to complete the payment of the funds.

The electronic commerce platform of procurement needs to be integrated with the external systems. It involves four aspects: The first is the bank E-commerce platform used for financing of the supply chain; the second is the tendering and bidding platforms, such as China Procurement and Tendering Network, China International Bidding Network, the National Public Service Platform, the National Administrative Supervision Platform used to obtain bidding information; the third is the logistics system of the third party used to obtain the logistics information; the last is the payment platform of the third party, which is applied for the payment by the procurement platform, and then the paid results can be obtained.

The electronic commerce platform of procurement is accessible to the internal procurement operation and the external suppliers. Through the information dissemination and coordination management, it can improve the work efficiency, unify the procurement processes and channels, and
it can strengthen the unified management of the suppliers so as to realize the unified management of price, quality, product and evaluation for the suppliers.

The electronic commerce platform of procurement is used to improve efficiency and to enhance the control force in the following nine aspects:

(1) Procurement demand and plan: through the information means, collect the material demand and plan of various secondary companies and third class companies, and carry out the centralized management. Through the use of information systems, simplify the work of data collection, and through the timely report of the procurement plan, control the procurement and improve the accuracy of the group procurement budget.

(2) Source searching management: the main ways of procurement are the tender, the price of the consultation, bidding, a single source and the supermarket.

(3) Contract management: It performs the management of the elements of the contract signed with the supplier to ensure the implementation of the framework agreement.

(4) Procurement execution: It manages and controls the internal procurement schedule for the group, and at the same time it can be integrated with other management systems of the group to form a collaborative management model.

(5) Procurement process control: It establishes the evaluation system of the procurement process, and carries out the evaluation and control of the suppliers and product information in the procurement process, and makes the timely detection of risk points in the procurement process, so that they can be managed and controlled.

(6) Quality management: Draw up quality standards, and check and accept the materials in accordance with the standards and problem handling.

(7) Category management: the procurement classification is divided into procurement classification, procurement category spending, category positioning, supply market analysis and other basic work.

(8) Management of suppliers: Unify the management of suppliers and establish the database of suppliers, which can well maintain their own supplier resources, and according to the different management requirements of enterprises, carry out scientific classification and grading work for suppliers, formulate the corresponding supplier management strategy. Establish the feasible mechanism of supplier selection, rewards and punishments, in order to select the suppliers of high quality constantly, to improve the level of procurement of the whole group, and to achieve the mutual reciprocity and benefit with suppliers.

(9) Management of experts: Establish the expert database within and outside the group. Through the information of the expert database, learn the expert information. In the bidding process, select the appropriate experts according to the actual situation, in order to enhance the bidding quality of the enterprise and to reduce the purchase risk.

The group can carry out the top-level design, plan, deployment and implementation in a unified way. According to the business characteristics of each section, it should complete business research carefully and analyze the differences of each section, and give the corresponding solutions. In addition, the system application takes the business circulation as the central part, in order to ensure that the existing business remains the same, so it gives full consideration to the demands of the future development of the group and set aside the enhanced and optimized space. The electronic commerce platform of procurement is accessible to the enterprises for the whole group, but the key enterprises should be selected prior to the implementation, and finally it can achieve the wide coverage of the enterprises within the group, involving the full coverage of the categories and suppliers.

**Trend of Electronic Commerce of Procurement**

The first is the specialization of the procurement market. The development methods of the enterprise procurement will gradually become the ways of Internet based and electronic commerce, and the procurement ways will develop from the integrated business platform to the specialized procurement business platform. The bulk industrial products will gradually form a number of vertical
specialized markets, such as iron and steel, coal, machinery and equipment, and provide financial, logistics, information and other value-added services; the supermarket procurement of supplies gradually will provide one-stop electronic business platform of industrial products in a similar B2C way of the customer category by means of the convenient purchasing, fair and transparent prices, faster logistics services and complete after-sales service.

The second is the disintermediation of procurement process. The electronic commerce platform of procurement tries to eliminate the problem of asymmetric information between suppliers and enterprise users as far as possible, in order to remove intermediary agencies such as distributors, agents, retailers and so on gradually, even the procurement personnel's role in the procurement process of some industrial products of supermarkets will be disappeared or weakened.

The third is the openness of bidding and tendering. With the implementation of the “Electronic Bidding and Tendering System”, the supervision of bidding and tendering of the government and enterprises will gradually be strengthened. The information of the whole process of the transaction including bidding announcement, prequalification announcement, bidding documents, bid opening records, publicity of the candidate for winning the bid, winning results, contract signing and performance is required to comply with the requirements open to the whole society.

Fourthly, whether the bulk of industrial products or the supermarket procurement of materials take on a trend of the whole process of online transaction. Matching of supply and demand information, matching of procurement sourcing, contract signature, process tracking, logistics and distribution, payment and settlement all are completed through the online way so as to realize the integration of commodity circulation, information flow, capital flow, logistics and services.

The fifth is the opening of the platform system. The platform markets and the proprietary markets will be gradually open to the third party payment, financial institutions, logistics enterprises, credit agencies and other service enterprises. Bases on the large data, construct the ecosphere of electronic commerce taking its own as the core.

Conclusion

With the rapid development of Internet technology, the electronic commerce has been widely used. It adapts to meet the demand of the latest economic development at the same time, and it promotes the development of the enterprise itself, especially the development of the supply chain, and it can also effectively enhance the competitiveness of enterprises. The electronic commerce can greatly reduce the procurement costs of enterprises, through e-commerce platform, and it can avoid cumbersome procedures and offsets of the traditional procurement so that it can form the integrated information system, and strengthen the management of suppliers. The electronic commerce platform can run for 7*24 hours, so it can reduce the loss, improve the service and increase trading opportunities. The electronic commerce platform of procurement needs to establish and improve the procurement management system, including the means of purchasing, executive mechanism and management means of procurement, which can prevent corruption, and therefore may suffer some resistance. The central position of a large state-owned enterprise in the whole supply chain is very prominent, and now they take the lead in carrying out the electronic commerce practice in the procurement links so that this can drive the rapid development of electronic commerce in the whole supply chain.

References


