
VALUE CHAIN MANAGEMENT IN ONLINE REVERSE AUCTION: TOWARDS STRATEGIC AND OPERATIONAL EXCELLENCE

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ABSTRACT

This paper examines the impacts of e-business strategies on existing value chain management settings and the implications for change based on the strategic and operational excellence of those strategies. Reverse auctions as a mean of e-procurement is analyzed toward the concepts of value chain management. Further, the paper identifies the fundamental necessity and relationship of value chain management for the successful conduction and implementation of e-business strategies.

Keywords: Value Chain, Reverse Auctions, e-Business, e-Procurement

INTRODUCTION

The concepts of Supply Chain Management have been around for quite a while and have already shown their possible positive impact on the performance of a company. In recent years the stakes of this game have changed. It is no longer considered being a field of innovative competitive advantage over the competition, but a necessity to stay profitable and competitive. Most companies have realized that only close collaboration with all involved partners can produce the kind of speed and reaction time to customer demands that are needed in today's business world.

Another shift in the focus took place in the past; the first steps in Supply Chain Management were mainly concerned about the integration of suppliers to ease the operations for their own company. Some companies even only focused on new strategies for procurement to squeeze the profits from their suppliers. But the slow move to put the customer in the center of all operations brought many firms to the point where they realized that only cooperation could deliver the desired results. Supply Chain Management changed to Demand Chain Management by examining the downstream components of the whole chain; the part directed towards the customer, but this focus is too narrow, so the Value Chain Management finally evolved. Value Chains are concerned about the whole chain, from the raw material supplier to the end customer, and set the value or the satisfaction perceived by the end customer in the center of attention.

The relationship with e-business can be a very close one; both concepts can greatly gain from the application of the other concept. Only a working value chain management can offer a company

the benefits from e-business, especially in e-commerce, to their fullest extend and e-business can boost the cooperation in the value chain to improve the performance of the whole chain.

SUPPLY AND VALUE CHAIN MANAGEMENT

The modification of the supply chain management concept is to expand the focus and include more partners, especially in downstream direction that further increased the benefits and importance of supply chain management. This was another step towards managing the whole chain from the raw material produced by the supplier to the end customer and building a network or chain of partners working jointly together to achieve better customer satisfaction. Demand chain management brought some new concepts and ideas into consideration that partly replaced the concepts of supply chain management in a narrow sense. If one takes this narrow definition of the supply chain that is concerned about the smooth operations with partners mainly upstream in the chain, the system can be defined as a push-system while demand chain management is a pull-system. (Vakharia, 2002)

This paper will not distinguish between demand and supply chain management and see them as different forms of the same idea. Every company should always consider the whole value chain from the beginning to the end and the demand chain for one company is the supply chain for a company's further downstream. Therefore the whole chain has to decide whether to use a 'push-systems', based on demand forecast and assumed consumption, or a 'pull-systems', based on the real consumption and demand of the end customer instead of forecast. The value chain also pushes the scope further by not only focusing on the smooth flow of goods and information and the small cooperation with the direct neighbors in the chain. It should also look at the operation of the whole chain and assessing the performance based on the ultimate measurement, customer satisfaction, and changing and improving the overall way of performing the related tasks. The, probably, easiest distinction between a supply chain and a value chain is the focus. Rash (2001) stated that supply chain management is mainly concerned about the manufacturing part of operations and thereby the flow of goods and information needed to process the goods, while value chain management also includes the general flow of information.

The 'pull-systems' should be implemented in highly responsive value chains that are able to quickly respond to customer demand and are faced with a highly volatile environment that would produce too many mistakes in forecasting customer demand. These chains need flexible operations and, more than anything else, the ability to share information about the real demand without noise or pollution and in a very brief period of time. Using e-business applications and the Internet to exchange data in real-time has helped companies using this approach to value chain management.

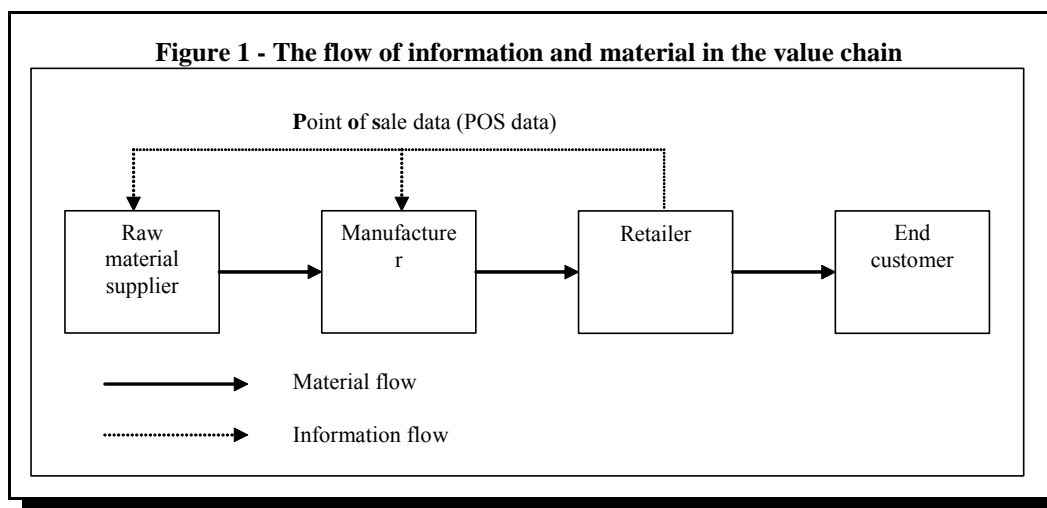
THE INFLUENCE OF E-BUSINESS TO VALUE CHAIN MANAGEMENT

To achieve excellence in the daily operations in the electronically connected world a company has to master both, e-business and value chain management. The advent of electronic data

interchange and later of e-business processes introduced infinite possibility for companies to really manage the whole value chain. (Taninecz, 2000; Talurri et al, 2007) The use of e-business can generally be divided into three main parts; a) sharing of information, b) cooperation, and, c) conducting of transactions.

SHARING INFORMATION

One example for the power of shared information is the possibility to share and exchanging POS (point of sale) data with the entire value chain and thereby enabling the involved upstream operations to increase the accuracy of the production schedule and helping to level the signals given to the suppliers. (Bandyopadhyay, et al, 2005) This reduced noise in the demand signal towards the upstream end of the chain, thus reduces the negative consequences of the so called “Bull Whip Effect”, that refers to the increased volatility of demand when procurement decision are taken based on local information and the application of batch-and-queue systems. Every company sends a more distorted signal about the demand to the suppliers, when using batch-and-queue, the amount purchased will be infrequent and very volatile, and this effect usually increases with every step upstream. This leads to unnecessary overcapacity for the supplier, as the demand peaks have to be met while the utilization drops in between the infrequent orders. Sharing the actual demand of the end customer with every involved party as shown in Figure 1 allows to level the amount purchased and produced based on this more accurate number, even when the value chain does not implement the pull-systems as mentioned earlier. Sharing of information can also include informal information about evolving marketing opportunities or changes in the business environment.



Cooperation in the value chain

The implementation of e-business technology is not limited to information sharing. Due to the fast pace of a changing environment, the companies have to make adjustment to their operations faster than ever before. Since the first economic revolution with the advent of mass production (Essig and Arnold, 2001) companies are able to achieve economies of scale and consequently lower production cost by concentrating on their core competencies, (Franke, 2003) and creates an even stronger pressure to cooperate with the other companies in the value chain. A single company can no longer meet the customer demand and the benefits of value chain management increase the competition. Franke (2003) suggests forming virtual web organizations where a net-broker chooses the companies based on the customer needs from a pool of firms to form a value chain tailored to the demand. Because the corporations are limited to their field of core competencies, they need to be part of several value chains with different partners. The necessary framework is set when the companies enter the pool; this addresses the need to have a stable environment and especially trust to create a relationship between two or more firms and the needed easiness to conduct business with the changing partners.

Forming trust in the value chain

Trust is usually one of the biggest obstacles to overcome in the endeavor to form a partnership and ultimately to jointly manage the value chain. In the past, trust was created by a long term business relationship, and cooperation could be slowly increased, but time is luxury in today's business world. Therefore companies have to become more flexible and open to partnership, as the competitive advantages of the past are a necessity of the present time even without forming the virtual web organization according to Franke; but there is a pressure for corporations to create partnerships with their suppliers and customers to form a value chain. E-business technology can help to ease the cooperation within the chain and together with a good framework help to create trust and enhance productivity of all partners. This holds especially true in the fields of engineering and research & development (Taninecz, 2000).

Collaboration along the value chain

One important prerequisite of collaboration is the ability and willingness to see the whole value chain and understand the impact of any kind of change on the overall performance. Measuring the effectiveness of changes using the end customer satisfaction and the positive or negative impacts on operations of partners helps to achieve a superior implementation of the concepts of value chain management. This leads to higher end customer satisfaction and more success in the business. Also the use of e-business applications has to be seen as measuring the influence on the whole chain. Craighead and Shaw (2003) have develop a simple model to assess the impact based on a matrix

with four fields, including the creation or destruction of value in the own company and the effected partners. According to their framework, every implementation of new information technology has to be tested on the overall creation of value and the roadmap for the future to get to the stage where value is created both in the implementing company and their partners. This might include changes in the application or the underlying business processes within the value chain to get the full benefits of e-business information technology.

The possible starting points for the initiative to cooperate can be manifold and the contribution of technology offers many solutions. The interconnection between suppliers and customers using e-business can affect every department. The engineering department and the efforts for research and development can achieve cost savings through collaboration. Especially the long-term savings are very appealing when joint product development makes the production for all involved parties more streamlined and cheaper.

A second field where collaboration leads to a significant smoothing of the operations is to jointly forecast customer demand and the available capacities for production and transportation. Most theoretical approaches to value chain management recognizes the value of leveling production, especially the theory of constraints urges companies to produce as much as the bottleneck is able to handle. Initially this theory was developed for the implementation in a single company but it can easily be expanded to a whole value chain. The biggest challenge is to precisely determine the bottleneck and predict its future capacity. (Rippenhagen, 2002)

All these approaches have to be taken by companies not only to lower the price of the product but also to shorten order cycle time and increase the level of customer service. Briant (2000b) concluded that expertise and service are more important than the factors like price or product line.

Transaction processing and e-procurement

E-business processes have the biggest impact on the ubiquitous of business transaction processing through EDI, Open EDI, and the extranets. Orders can be sent and accepted within minutes instead of probably days using postal mail or hours using a fax machine. But speed is not the only advantage of online transaction; the reduction of errors based on the human nature is also an important factor to shift order processing. (Briant, 2000a) In the past every order had to be written by a human on the customer side and it had to be entered by a human on the supplier side, naturally this was a possible source of data errors. Today partners can communicate automatically using the same electronic format helping both companies to integrate their production system into the procurement process.

The most outstanding and most important factor for every industry or business-to-business (B2B) exchanges remains the reduction of cost. This argument is twofold and touches the core of this paper. First, the necessary transaction cost to process the order and the time and money spend to search for the best offer can be significantly decreased by the use of online procurement or at least

the use of electronic data interchange (EDI) with the existing supplier base. The easier access to information about the partner can also address the asymmetric allocation of information that usually leads to uncertainty for the buyer. These concerns about the incomplete information and strategies to hedge the risk using clauses in the contracts can be partly dissolved with more information. Particularly when using online marketplaces and standardized contracts and transaction formats the gain in time saved for negotiation and closing the deal, as well as, the time saved to collect the data about the supplier is even more increased. The supplier is also able to save on transaction costs when the order is processed using electronic connections integrated to the software of the firm. This advantage is generally undisputed and aligns with the firm's strategic commitment in cost reduction and towards operational excellence.

The second aspect of the possible cost savings is more ambiguous. From the short-term perspective, online exchanges and marketplaces offer infinite possibilities either to the suppliers or the customers, mainly based on the fact which side has greater power. On the first sight it seems to be heavenly to be able to buy or sell to the whole world, all of a sudden the supplier base is huge and the markets are promising, but people start to realize that this fairy tale has a drawback. Even though the cost savings of the purchases are tremendous, the volatility of the supplier basis is very costly for the company on the long run. As mentioned in the two prior sections, value chain management has to rely on the ability to share and exchange information and collaborate within the value chain. The realized cost savings of this strategy are not obvious for the purchasing activities, but the company as a whole can extremely benefit from the long-term relationship. Taking the holistic view by including financial and quality measures that offer the companies smooth production processes and increasing cost on product development and production.

ONLINE REVERSE AUCTIONS AS A FORM OF E-PROCUREMENT

The use of reverse auctions as a procurement tool has been discussed very controversially. While in normal auctions the buyers keep offering a higher price to buy the product. On the other hand, reverse auctions, is designed so that sellers keep offering a lower selling price to get the contract with the buyer. Obviously this is only applicable when the buyer has enough power and several suppliers are willing to compete for the business. Additionally the buyer has to find a way to qualify the supplier to the quality system and requirements of the buyer such as the RFQ (Teich, et al, 2006), to compare the bids. Only if all the sellers meet the minimum requirements, the process and bought product appears to be useful.

In reverse auctions, the savings on the cost per unit are usually impressive for the buyer. Many suppliers condemn the use of reverse auctions to squeeze their margins and destroy long-term relationships with their customers. According to Hannon (2003), some advantages are unchallenged; online reverse auctions make the bidding process much faster in comparison to the old days when this type of bidding process was conducted via mail. Now the use of real-time auction software enables the participants to complete the process within hours including the award of the resulting

contract. Secondly, the business is open to more companies, thus offering suppliers the chance to win new contracts and new customers. This argument is similar to the general argument of e-commerce that it opens new markets and businesses for the company. And that is true in the case of online reverse auctions when the auction is announced clearly enough by the buyer to attract companies that usually did not take part in the normal bidding process. Other advantages for the supplier can include lower marketing and sales costs, faster reaction time and improved feedback on the offer. Emiliani (2000) stated that another advantage is greater information for the buyer, even if the company is not willing to bid aggressively, the information about the market price and the bidding behavior of competitors has value for the company. This can be used as an indicator about the competitiveness of the operations and the offered price.

The use of online reverse auctions is spreading due to the advent of cheaper and easier software packages that enable even small firms to start reverse auctions. Hannon (2003) studied has shown that 35% of the companies with more than \$100 millions to spend use online reverse auctions tools. Gartner Group has reported that the use of software has reached \$13 billion in 2007 and will reach \$20 billion by 2012.

Useful formats of reverse auctions

Types of auction that can be used include the English auction, single and multiple round sealed bids, aka the Vickery auction. (Talluri and Ragatz, 2004) One could also consider a reverse Dutch auction that has a possibility for an online reverse auction.

The English auction is what is commonly referred to as an auction where the bidders make their bids in real-time apparent to all participants of the auction until either a defined period of time is running out or only the highest bidder is left; in the case of reverse auctions until the lowest bidder is left. This procedure generally leads to aggressive bidding and thereby more favorable outcomes for the auctioneer. A possible drawback can be the possibility of collusion or suppliers' concerns about revealing the price.

Single and multi round sealed bids are characterized by the fact that the participants do not know the bids of the other companies. The single round version ends with this one bid while the companies are given the chance to lower the price after each round because the lowest price is announced when the multi round method is used. This procedure is widely used for the bidding process of construction projects or in some form for the procurement of goods in the industry when offers are collected. The two main differences to an online English auction are that the bids cannot be seen by the competitors and that there is no real time bidding process but all bids must be submitted prior to a certain deadline. Therefore, this process is not as competitive as the English auction.

A modification of the sealed bid auction was developed by Vickrey, who observed that the outcome of an English auction be obtained in a sealed bid auction when the winner is awarded the underlying for the price of the second highest/lowest bid. Milgrom (1989) stated that this procedure

is supposed to motivate the bidder to name the price they are truly willing to accept, as the winner will be awarded the underlying for a price up to his bid, if he is the highest bidder. The achieved price is therefore closer to the market price as at least two participants would be willing to accept the price.

The normal Dutch auction is to some extent the opposite of the English auction. In a Dutch auction the auctioneer starts with a very high price and keeps lowering the price until one participant agrees, then the auction immediately ends. The behavior of the bidders is influenced by their predictions about the behavior of the competitors. Therefore every participant will probably end the auction at the highest price he is willing to accept, leading to the same price as in a single round sealed bid auction. (Milgrom, 1989) A reverse Dutch auction would obviously start at a low price and the auctioneer would keep increasing the price.

The bidders are price-takers in the English auction and the Vickrey auction as the price is also dependent on the behavior and the bidding of the other participants. This is obvious for the Vickrey procedure but also as the winning price in the English auction will probably be different from the maximum/minimum that the bidder was willing to offer. The difference will be smaller when more bidders participate and the closer the maximum/minimum prices are.

Theoretical literature has proven that the outcome and price is equal using all forms, when the bidders are risk-neutral, have independent valuations about the price they are willing to accept and only one unit is sold. (Talluri and Ragatz, 2004)

Milgrom (1989) stated that if the demand is more than one unit and the actual demand is a function of the price, auctions where the price is determined by the winner's price instead of the second bid will lead to lower prices and the quantity sold is higher. Interestingly the profit for the seller and the buyer will also be higher using these first-bid auctions. Another interesting fact is that the price in an open auction is independent from the fact whether the demand is fixed or variable while the price will be lower for variable demand in a sealed bid auction. (Hansen, 1988) This can explain the fact that first-bid auctions are more common in industrial procurement decision, especially the sealed bid auctions rather than the Dutch auction.

On the other hand it can be shown that if the amount of units is defined in advance, the value or cost associated by all bidders is no longer independent as the market value can be estimated. In this setting the resulting prices for second bids are likely to favor the buyer/customer as the bidder behavior and the price is also dependent on the behavior of the other participants. This will decrease the price in a reverse auction and thereby shift the profits to the customer. (Milgrom, 1989) This gives a possible explanation why English auctions are widely used for auctions where the auctioneer is the seller of clearly specified goods.

Effective set-up for the auction

The actual setup of the auction can also influence the outcome. Especially the applied rules and the number of participants are important questions to answer before setting up the actual online

auction. The number of invited suppliers should be limited to qualified suppliers that are able to guarantee a certain set of standards for quality, delivery, lead time and other operational requirements. The actual recommended number differs in the literature; Emiliani (2000) suggest that in order to have 10 to 20 suppliers bidding, the number of invited companies can be as high as 50 to 60 firms, while Talluri and Ragatz (2004) only set a lower limit of four or five suppliers to ensure a competitive bidding process.

From the point of view of value chain management the number of possible suppliers should be lower. This is the result of the strategic product positioning for the firm and the perceived value of branding to the customer. Furthermore, the integration and cooperation of the value chain require commitment and familiarity between the involved companies. Commodities or products that do not have a high value for the operations of the value chain can of course include a bigger number of possible suppliers as the switching costs and the interconnection between the buyer and the seller is less complicated.

The question of applied rules is a delicate topic. As the customer usually has more power in the industries where reverse online auctions are used, the rules usually favors the buyer, therefore a code of business rules has to be developed to ensure the fairness of the auction. (Herbert, 2003) The principles for business developed by the Caux round table (Caux, 2001) are a starting point for online reverse auctions as well, but are typically not yet introduced. (Emiliani and Stec, 2002b) Providers of online auction tools normally offer a set of rules ensured by the software. Part of the rules includes the process of how to factor in aspects of quality and performance into the bidding process if these are not on the same level for all participants. On the other hand, in the study of reverse auctions with non-competitive contracts, Engelbrecht-Wiggans and Katok (2006) indicated that “one of the goals of procurement is to establish a competitive price while affording the buyer some flexibility in selecting the suppliers to deal with. Reverse auctions do not have this flexibility, because it is the auction rules and not the buyer that determines the winner. In practice, however, hybrid mechanisms that remove some suppliers and a corresponding amount of demand from the auction market are quite common.” (p.581)

Talluri and Ragatz (2004) have shown an example of how to determine the winner of the bidding by including several attributes like price, quality and delivery. These auctions offer the possibility to assess the biddings based on more information than solely on the one-dimensional focus on the price that is often criticized by the invited suppliers. This approach needs more preparation for the customer as the value of each factor or attribute has to be determined and the weights should be made public to ensure a fair bidding process. When using a real time auction like the English auction, there needs to be tool to calculate the score in regard to the weights and to instantly show the lowest/highest bid. The winner of a sealed auction is determined afterwards without the need of calculating the score in real time. A DSS tool was proposed by Talluri, et al (2007) to handle the multitude of information to select the winning bid.

Limitations of online reverse auctions

But besides the impact on relationships and value chain management that will be discussed later there are drawbacks that limit the effective use of online reverse auctions to very specific products. The process is mainly only applicable to products that can be bought from the shelf or commodities. These groups of products guarantee the possibility to compare the bids and the fit into the product of the buyer. Products that need complicated technical requirements and that cannot be clearly described on the announcement of the bidding process will not end up in a successful online reverse auction. This situation will lead to confusion and inconsistent bids on the product that will probably not fit the customer's needs and demand.

According to Talluri and Ragatz (2004) the underlying products are limited by certain constraints. First the product or service as to be easily specified for the above mentioned reasons. Further on price should be at least a major factor in the decision to take advantage of the reverse auction without forgetting about the additional factors. Also there should be sufficient number of suppliers in the market to have competition and choices without having an already established commodity market but the switching cost between those suppliers and their products should be rather low. Finally, products that are considered "strategic" for the company should not be purchased through online reverse auctions to ensure a smooth production flow for the customer. Talluri and Ragatz (2004) thereby follow the definition of a strategic item introduced by Kraljic (1983). According to this definition strategic items are characterized by the need for long-term availability and the scarcity and/or the high-value of the goods.

Also the anonymity of the bidders sometimes leads to problems when the buyer is not able to make sure that the supplier is actually able to meet the requirements. (Anonymous, 2000) This has to be addressed by a qualification program before the bidding process is entered. Nevertheless these auctions can still be used as a tool to negotiate the price at a later stage of the procurement process when the product specifications and details are clarified with some reliable suppliers. (Schwartz, 2004) In this case the reverse auction only serves the purpose to achieve the lowest price after a qualification process that is also included in the normal procurement process.

This approach can overcome some of the drawbacks of a pure online reverse auction. The biggest disadvantage is the fact that usually non-financial figures are not part of the bidding process. The flexibility or integration into the processes of the customer is usually not included in those negotiations that mainly focus on the price. But focusing on solely the procurement price is the wrong approach as those total cost can actually increase when the wrong supplier is chosen. (Tam Harbert, 2003) This can be addressed if the auction rules enable the buyer to choose any bid and not necessarily the lowest bid. In such a situation, factors like quality and reliability can be taken into account. (Emiliani and Stec, 2002a)

As usually the buyer is very powerful when a reverse auction is implemented, the applied rules favor the buyer over the seller. (Harbert, 2003) Therefore a framework and code of business has to be used that protects sellers from misuse of this tool. As a result, the use of pricing

information to influence other suppliers or the behavior in the negotiations and decision-making process after the auction should follow ethical rules (Emiliani and Stec, 2002b)

Online reverse auctions and the impact on value chain management

In the case of sophisticated and specialized products, the reverse auctions stand in contradiction to what value chain management is asking for. Powerful buyers have already asked for a lot when including their suppliers in the value chain; the company has to be extremely flexible, deliver flawless quality in a just-in-time operation, provide engineering support for free, reduce cost and respond to the fluctuation of the demand. (Altman, 2003) Most suppliers changed their processes accordingly in order to keep the business and now the customer is introducing the online reverse auction as a tool for procurement with the goal to lower the price. This behavior clearly destroys the trust and the relationship between the two companies leading to negative results for the value chain. As trust and partnership is the most valuable intangible asset in value chain management, the effects of online reverse auctions might be well beyond the financial consequences discussed later. If implemented for other products than off-shelf-products or commodities these behaviors clearly do not aim at mutual benefits but at solely reducing the price for the purchased good. (Emiliani and Stec, 2002b) Generally speaking reverse auctions are a tool to increase the competition between the suppliers instead of fostering the cooperation along the value chain. (Jap, 2003)

Modern value chains operations have to be synchronized to a high level based on long-term commitment and cooperation. Squeezing the margins is not considered an acceptable action in such an environment and pressuring the supplier to produce at lower cost has to result in a mutual benefit. This is not part of value chain management that is only managing the own procurement efforts but as already mentioned above, the resulting overall cost can be significantly higher because of quality issues or the lacking integration of operational processes. The reintroduction of higher inventory levels due to the lost integration can affect the bottom line severely and eat up all savings on the negotiated price.

The approach to conduct multi attribute auctions clearly is more compatible with the concept of value chain management. Factors like cooperation and interconnection to the customer can be used to assess the bid and the winner of the process. In regards to value chain management, the used of weights for factors other than the price should be high, especially for quality and reliability, to ensure smooth flow of material and an easy integration into the existing system.

In general the buyer has to be careful that the sellers do not bid too low, otherwise the long-term survival of the supplier is not guaranteed. Aggressive bidding in reverse auctions is generally not rewarded on the long run as, under the assumption that all competitors are generally able to provide the service for the same price, the winning bidder underestimates its costs. (Milgrom, 1989) Therefore the winner probably does not get the desired profit margin.

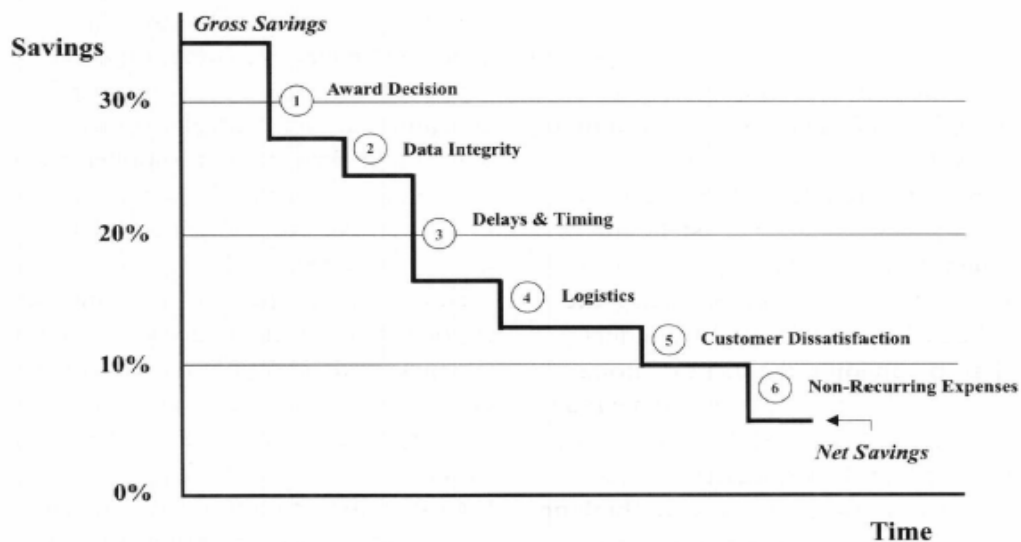
Value chain management should aim at long-term supplier development and mutual efforts to improve the operations and cooperation. This includes efforts to secure the survival and financial well being of all involved partners. Inflating the aggressive bidding of the suppliers will not lead to the financial well-being of the company and thereby also harm the customer when the switching cost for the underlying product are significantly greater than zero, as should be the case for any product that is not a commodity or a off-the-shelf product. Shared efforts for process improvement will probably lead to more substantial savings than squeezing the supplier's margin for short-term improvements. Online reverse auctions have appeal for the managers of the customer because they show a big impact on cost in a rather short period of time; they are a "quick-hit" solution, but they do not help to unveil the root causes for the lack of operational excellence. (Emiliani and Stec, 2002a)

Savings from online reverse auctions

Customers have to determine the real savings based on the total cost instead of being bedazzled by the numbers published by the auction service companies. Therefore one has to distinguish between gross savings and net savings. (Emiliani and Stec, 2002a) Gross savings is the difference between the last price paid for that part and the lowest bid, while net savings also take the occurring losses related to the process into account. The most obvious loss is the switching cost to a new supplier. This can include expenses for qualification, restructuring of the processes for both firms, training for employees or the electronic connection between the customer and the seller. A rough estimation of the switching cost is usually shown in the reserve price. (Emiliani and Stec, 2002a) The buyer will most probably not change the supplier if the reserve price is not met because the obvious switching cost would be higher than the savings on the purchase price. It can be difficult to accurately determine the switching cost as long term effects have to be considered as well, therefore the reserve price is not a guarantee that the company is really saving money when using an online reverse auction.

The buyer has to assess every possible source of additional cost that is related to changing the supplier including the smoothening effect of personal relationships with the management of the seller. These factors have helped to build trust between the companies and benefited both firms, but the supplier probably feels left alone when the customer is switching to reverse auctions and other suppliers or trying to squeeze the margins. (Altman, 2003) According to Emiliani and Stec (2002a) the most common contributors to losses need to be divided into direct losses that are part of the negotiation process. These include losses related to the award decision, data integrity and timing, while indirect losses include logistics, recurring or non-recurring expenses and customer satisfaction. See Figure 2 for an example how these losses can change the actual savings of a customer.

Figure 2 - Schematic diagram of direct and indirect losses that buyers may experience when implementing online reverse auction results. Source: Emiliani and Stec, 2002a



Note: Savings are not realized until the buyer begins to receive parts from the supplier

According to Kumar and Chang (2007), reverse auctions is tactical and can provide short term gain due to price as a single criterion for purchase. However, there is virtually no value added advantage beyond the quoted price and the buyer faces further indirect cost, especially with new suppliers.

The net savings are sometimes hard to assess, as the understanding of the impact of decision made in one department on other departments' operations is not highly developed. However, this holistic view has to be taken to achieve the improvements. Value chain management usually introduced this approach to a certain extend and enabled companies to see the impact of their suppliers' behavior on their performance and especially on the end towards customer satisfaction.

CONCLUSION

E-business can obviously boost the performance of a value chain as the transactions and internal processes of the value chain are simplified by the use of modern information technology. The savings regarding cost and time offered by e-business procedures should easily be translated into cost reduction and increased competitive advantage. Therefore, companies have to adjust their way of conducting business to meet global business environment by the implementation of an e-business infrastructure.

On the other hand value chain management is a prerequisite for e-commerce as a part of e-business. Only companies that have mastered their production in cooperation with their supply network will be able to offer the flexibility and speed necessary for e-business. Companies and value chains that are not responsive enough or lack the efficiency will lose the battle for e-business. As much as the speed and the connectivity of e-business have enhanced the value chain managements and as much as it has increased the pressure to perform and optimize value chain management.

Online reverse auctions as a mode of e-business or e-procurement have become popular in the last years as the development of the used technology became more advanced. Many companies see the chance to increase their profitability by utilizing these tools but overlook the limitations of the concept. The results can be clearly positive if the company pays attention to those limitations regarding the underlying products and services and carrying out of the actual online auction. This includes applying the concept only for suitable products that can easily be specified and the supplier can easily be switched.

Nevertheless, there are significant concerns about the compatibility of value chain management and some forms of online reverse auctions. As long as long term commitment and stability of the chain in some form is not considered in the process, the overall impacts for a company that has successfully implemented value chain management will be negative, even though the financial performance of the purchasing department will increase on the short run. A company without an efficient value chain management processes will take the wrong approach to future competitiveness and financial and operational soundness. In Jap (2007) concluding remark of online reverse auctions, preserving the inter-organizational relationships is a delicate balancing act.

When all these concerns are addressed and the procedure is used in accordance to the partnership with the pool of qualified supplier, the use of an online reverse auction can save time in regard to negotiation of the price and other operational measures. In this case the auction tool will be a part of the e-business strategy in saving time and money for all involved parties as any other e-business tool. It is therefore important to approach this topic as mutually beneficial and proceed jointly in order not to disrupt the value chain management.

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