

Successfully Implementing Electronic Auctions and Markets

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Electronic markets can be disruptive of traditional ways of trading, altering the equilibrium among competing interests and the consensus on trading rules amongst buyers, sellers, and intermediaries. The process stakeholder model gives those considering the implementation of novel auctions the framework for ensuring that however that equilibrium and consensus change, all parties will be better off.

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Business to business electronic markets are all the rage. But if you build it—will they come? What can today's budding market makers learn from the past. Creating a new electronic market or auction does not guarantee success. As Nets Inc., the Dutch Flower Auctions, and numerous other companies have discovered, building it does not guarantee customers. After all, electronic markets are often disruptive of traditional ways of trading. They disrupt the equilibrium among competing interests and the consensus on trading methods amongst buyers, sellers, and auctioneers. By working through a number of examples of successful and unsuccessful attempts to found auctions, we will specify three rules that are critical to creating a successful online auction:

- Create a win-win-win, where all parties (auctioneer, buyer, and seller) are better off with the new trading model than the previous trading model.
- Build a critical mass of suppliers and buyers immediately.
- Reduce transition risks and costs for participants by creating trust, leveraging standards, and integrating with existing processes.

We will work through a number of cases using a process stakeholder framework, which will provide managers with a way to systematically consider the impacts of new auctions on different stakeholders. This framework helps us identify the areas that need to be addressed to drive the successful adoption of a new auction.

Why do Electronic Auctions Fail? Some Cases.

We have analyzed a number of failed electronic market initiatives. Two in particular that we have studied in detail are the electronic auctioning initiatives of the two major Dutch Auctions located at Aalsmeer and Naaldwijk. These auctions are the two world centers for the auctioning, re-assortment, shipping, and distribution of flowers. Everyday these two centers auction off 34 million flowers and 3 million potted plants in the course of over 60,000 transactions. By 1990 they found their growth increasingly constrained by the physical logistics of the auction facilities. Thus they both launched a number of electronic and non-electronic auctioning initiatives they hoped would reduce the logistical requirements for running their auctions. The failure of these early initiatives is highly instructive to new electronic market makers.

Example: Sample-Based Auctioning at Aalsmeer

Flower Auction Aalsmeer began a sample-based auction for trading potted plants in 1994. In a sample-based auction, growers send a sample of the product to the auction house along with information on the available inventory, packaging alternatives, and delivery constraints. During the auction, the sample represents the entire inventory available to buyers. Buyers bid for inventory in the auction hall and specify product packaging and delivery details to the grower. All of the information is exchanged with the grower through EDI. By reducing the number of times the flowers are handled, sample-based auctioning was designed to reduce the costs due to transportation, packaging, and damage.

The stakeholders—the growers, the buyers, and the auction house—expected a number of different benefits. First, by uncoupling logistics and price determination, the auction house and the growers expected to multiply the number of transactions per hour. In reality, the number of transactions per hour decreased as buyers had to specify the terms of delivery. Second, while the auction house expected 45 percent of the supply of potted plants to be transacted in the sample-based auction, only 10 percent was actually transacted this way. Thus, sample-based auctioning did not effectively reduce storage requirements. After numerous attempts to increase the volume transacted by sample-based auctions, they were discontinued in late 1994, a life span of only nine months.

Why did the sample auction fail? The buyers were not willing to trust that the absent inventory matched the quality of the sample, and thus they expected a risk discount. This, in turn, reduced the suppliers' willingness to provide material for the sample-based auctions, leading to their failure. In sum, the intervention of the auction house to reduce its costs and manage complexity did not lead to win-win solutions for the suppliers and buyers. Let us consider another example of auction adoption failure.

Example: The Vidifleur Initiative

The Vidifleur initiative intended to use video auctioning to allow buyers to trade from outside the auction hall, thereby uncoupling price determination and logistics. When the product arrived at the auction hall of Flower Auction Holland in Naaldwijk, a photograph was taken, digitized, and stored in auction computers. The computer transferred the picture for display to a screen in the auction hall, where buyers

could bid for the product based on the image of the product. Buyers were also able to bid for and look at the potted plants on computer screens in their private offices. The computers in the private offices also provided a synchronized representation of the official clock in the auction hall.

Buyer reaction to screen-based trading was negative and led to the termination of the experiment in late 1991. Buyers cited three main reasons for not adopting the new system. First, the clock-based trading system provided no new efficiencies for buyer. Second, the quality of the auction hall video display was perceived as poor, and trading from outside the auction hall created an informational disadvantage. Those watching a computer screen in private offices could not observe the reactions of other buyers to the bidding process. Third, at the back of each auction hall is a coffee shop where buyers interact informally and share information about the market. Those trading from a private office missed the access to the social interaction and information.

Why did Vidifleur fail? Vidifleur failed for two reasons. First, buyers were dissatisfied by the way flowers were represented electronically. Second, buyers in the hall had important information that those trading on screen did not: they could gauge the interest in particular auctions and products by reading the faces and bodies of other buyers. They could feel the bidding in a way that those removed from the hall could not. Let us consider some further failures.

Example: Exmtrade¹

Exmtrade was a firm that was created by three senior executives from the apparel industry. Its objective was to create an auction market for trading excess merchandise in the apparel industry. In 1996, the company created proprietary software that allowed both manufacturers and retailers to display photographs of apparel, inventory holdings, and other information online. Typically, in this industry, major retailers carry current fashions and off-price retailers sell late excess inventory. As the manufacturing and merchandising is fragmented, there is often a lot of excess inventory in the supply chains. When this inventory is not cleared it loses substantial value. Exmtrade's value proposition was to create an efficient market place, enabling large retailers like Federated and various manufacturers to clear their merchandise on a centralized electronic market to Target and other off-price retailers.

After developing the software, the company introduced it at various tradeshows, where it was instantly recognized as an innovative product. Thousands of copies of the software were taken by manufacturers and buyers alike for installation on their PC's. Yet despite the warm reception at the tradeshows, and both high installation and registration rates, the actual use of the software to clear excess merchandise was dismal.

Despite strong motivations for suppliers to clear excess merchandise, not enough inventory was put on the market to sustain repeat visits by buyers. Surprised and dismayed, the executive team called a meeting with one of the authors to diagnose the problem.

So what was the problem? Although the market would benefit them, suppliers were not able to master the new, slightly more complicated process of accessing the online marketplace, arranging digital photographs of their products and then loading them into the online market. This may not sound like a difficult process, but yet it was novel and required a change in supplier organizations, whether in New York or Hong Kong, and retraining the staff. Subsequently, very little inventory was made available and the market did not achieve critical mass from the get go.

This left the company with two alternatives to grow its business. The first was to either establish a physical presence in a number of cities, or have samples mailed overnight to a central location, where they would be digitally photographed and then returned to the supplier. But this too would require a radical change in supplier routines. The second, more radical alternative was to buy merchandise very cheap, assume inventory risk, and then resell it online through the software. But this would constitute a further risk and would require substantial infrastructure.

After evaluating the alternatives and assessing the requirements to grow the business, the general partners decided to sell the software to another firm planning an Internet roll-up play.

So why did Exmtrade not succeed? Despite having created a potential win-win for all the parties concerned, Exmtrade failed because it had not paid careful attention to the process re-engineering and process integration requirements generated by introducing a new auction mechanism to the existing market. These changes would have required the suppliers to re-skill staff and establish new processes for product representation. As the viability of the electronic market was uncertain, most

suppliers did not want to commit to this change until others had done so, in essence creating a chicken and egg problem. Suppliers were waiting for buyers and other suppliers to enter the market, and vice versa. Thus the market never achieved sufficient volumes and liquidity to succeed. Let us consider another example of market failure.

Example: Nets Inc.

In 1990, Donald Jones was on his fifth startup, an attempt to bring together regional buyers and sellers of manufacturing equipment. Originally called Automation News Network (ANN), the company printed monthly magazines of industry news and, every six months, produced an industrial directory diskette. Jones intended his paper and disk products to be a starting point; the goal would be a kind of electronic clearinghouse for manufacturing news and products. With the development of the World Wide Web, Jones immediately saw that it could do everything he had hoped to do with a proprietary system at a fraction of the cost. By the end of 1995, he had changed the name of his company to Industry.Net and had posted much of the information from his print catalogs and diskettes on the Web. Jones knew that the next step—moving from Internet publishing to Internet e-commerce—would require a serious infusion of capital. In 1996 Jim Manzi, the former CEO of Lotus Corporation, was named CEO, and Industry.Net was renamed Nets Inc. Nets Inc.'s goal was to improve the efficiency of business to business trading by creating catalogs across multiple markets and providing trading systems through auctions. Nets Inc., however, failed to takeoff. It did not achieve a critical mass in any one market segment and was sold at a substantial discount to Perot Systems in June 1997.

Because Nets Inc. could not attract a critical mass of buyers, it could not provide suppliers with a compelling value proposition. Because it could not attract a critical mass of inventory in any one category, it could not provide any set of buyers with a compelling value proposition.

Why did Nets Inc. fail? While there were many reasons, one worth noting was its rapid entry into multiple markets without building sufficient critical mass in any one market. In an electronic market, failure to achieve critical mass rapidly can be fatal. If suppliers don't see enough buyers for their product, or buyers don't see enough suppliers for their needs, both parties are likely to opt out. Nets Inc. assumed that a

common set of product categories and market mechanisms could be developed across industries, although, for example, the development of EDI standards showed this was difficult to achieve. Nets Inc. also assumed that they could create substantial changes in how multiple industries did business, which, in the past, has only been done by powerful customers.

Why do electronic auctions succeed? Some cases.

Not everything everyone has done has failed, obviously. Let's look, for contrast, at some successful initiatives.

Example: Tele Flower Auction

When the Dutch flower auction houses imposed import restrictions on East African flowers, the East African Flowers group (EAF) responded by creating the Tele Flower Auction (TFA). It launched the TFA in March of 1995 with 2 growers and 70 buyers. After a few months, it allowed growers outside East Africa (for example, Spain, Colombia, France, India, and Israel) to join, and after one year had 35 growers and 150 buyers. The TFA allows buyers to bid, Dutch auction style, through personal computer. The PC provides information on the next flower lots (producer, product, unit of currency, quality, and minimum purchase quality), and a clock synchronized to the official clock at the auction. Logistics and price discovery are uncoupled: the flowers are no longer visible to the buyers, and the buyers are no longer physically present in the auction room. Buyers can earmark lots that interest them, so that the PC will alert them when those lots are about to be auctioned. The price starts high and drops incrementally until a buyer interrupts the process by stopping the clock through his keyboard. The buyer then specifies the quantity he or she wishes to buy, and the clock is reset and the process restarts, continuing until the remainder of the lot is sold.

Growers send the flowers to EAF, and EAF stores these flowers in Amstelveen. The distribution of the flowers from Amstelveen to the buyers' addresses (near the traditional auction houses at Aalsmeer, Naaldwijk, and Rijnsburg) is arranged and paid for by the EAF.

In contrast to the sample-based auction we looked at, the TFA enables buyers to trade at a distance. It provides better and more frequently updated supply information. The speed of the TFA system is amazing. Not only the auctioning process, but also the after-sales process is very fast; sometimes within half an hour products are delivered at the buyer's address.

And the TFA tightly controls quality in order to build trust. The TFA's motto is, "Buyers have to trust the quality blindfolded." Buyers can still inspect the imported flowers; 30 percent of the buyers, mostly those nearby, do so regularly. Reliable product information and stable quality control are essential. Quality control is done by the TFA's quality inspectors at the grower's place, at the distribution point in Nairobi, Kenya, and at the TFA in Amstelveen. Buyers also trust its IT innovations. One of the reasons seems to be that the Dutch auction clock is still the price discovery mechanism; buyers are used to that mechanism. Buyers were enthusiastic about the quality and the delivery time of the auctioned products, and about the service level of the TFA. The prices were on average no higher or lower than in the traditional Dutch flower auctions.

Why did Teleflower succeed in contrast to Vidifleur? First, Teleflower fulfilled the clear need of the Dutch flower buyers to access foreign supply banned from the traditional auctions. But more importantly, the introduction of the auction was carefully managed to enhance buyer confidence. Stringent quality control created confidence among the buyers in the quality of the product. In some ways the high levels of quality assurance subsidized the buyers, and reduced their product authentication costs encouraging them to use the market. In short, the EFA was able to build trust in the auction—a critical precursor to success when the product can vary tremendously in quality. Furthermore, the Teleflower auction was carefully designed to assure there were no differences in the information available from the auction house to all buyers—ensuring a perception of fairness.

Example: Aucnet

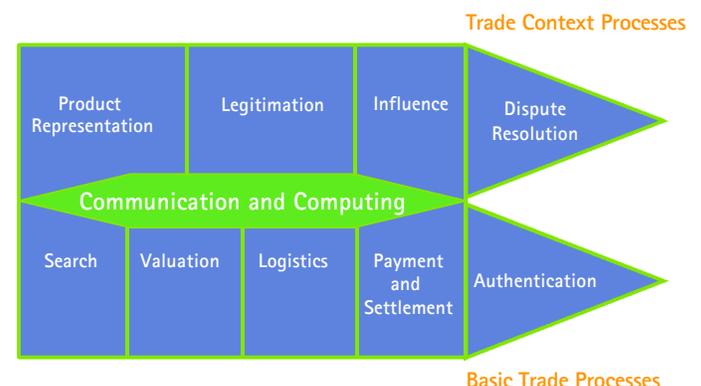
Aucnet was introduced in 1986 in Japan by an entrepreneurial used-car dealer. The Aucnet system is a centralized on-line wholesale market in which cars are sold using video images, character-based data, and a standardized inspector rating. Sellers must have their vehicles inspected by Aucnet mechanics, who assess damage and summarize the quality rank in a single number (from 1 to 10). A car sold through Aucnet remains at the seller's location until the transaction is completed. Then a transport company delivers it directly to the buyer. During the electronic auction, sellers and buyers are linked to Aucnet's central host computer via satellite connections.

Aucnet offers dealers the same information as conventional automobile auctions, but in much less time. Dealers do not have to spend a whole day in order to bid for the one or two cars they are interested in. They can be on their own lot, selling cars and making money. Aucnet distributes its auction schedule in advance, so used car dealers can download the data and images of offered cars through the satellite network and limit the time they spend to only the cars they are interested in buying. They can also use that information and data to gauge customer interest before they bid.

Like the TFA, Aucnet created new value in the resale market for cars by consolidating the quality control and authentication activities into a central organization. Because of its stringent quality control and standardized ratings, buyers were willing to pay more for an Aucnet automobile. Aucnet was able to create greater buyer trust in the auction process. Moreover, traditional auctions require space, parking spaces, and these do not come cheap in Japan. Aucnet created the largest auto auction in Japan without using a single parking space; in 1995 it listed over 230,000 used cars. And it can easily accommodate its 15 percent yearly sales volume increases. Finally, used car sellers in traditional auctions incurred the cost of transporting unsold cars back off the lot, and 45 percent of the cars typically were unsold. Aucnet eliminated such costs by uncoupling logistics from price discovery.

Using the Process Stakeholder Framework for Successful Implementation

To avoid pitfalls and increase the opportunities for success we developed the process stakeholder framework² to systematically identify the areas of change created by auctions that require management attention. This framework is illustrated below:



The process stakeholder framework identifies ten processes required of all participants for trading. These include such basic trade processes as:

- **Searching** — the processes for discovering and comparing trading opportunities
- **Valuation** — the processes for discovering the price (e.g., a specific auction method)
- **Logistics** — the processes for delivering goods to customers
- **Payment and settlement** — the processes for transferring funds from buyer to seller
- **Authentication** — the processes for assessing the quality of the goods sold, and the credibility of the buyers and sellers

The Internet and improvements in information processing are dramatically changing these processes within and across firms. Driven by technological change, these processes are becoming more efficient, and this new degree of efficiency is altering the balance of power and opportunities for profit among buyers, sellers, and intermediaries such as auction houses and upstart electronic market makers. Changes in basic trade processes are often complemented by changes in what we call trade context processes. These include:

- **Product representation** — processes which specify the presentation of a product from a seller to a buyer (e.g., whether tangible flowers or their electronic image)
- **Legitimation** — processes for recording and recognizing the transaction
- **Influence** — processes for ensuring that commitments among trading partners are met
- **Dispute resolution** — processes for ending conflicts among buyers, sellers, and intermediaries such as auction houses

Trade context processes generally serve to enhance trust in the trading process and legitimize the trade. While some trade context processes, such as product representation, are changing with the emergence of multimedia technologies, trade context processes, in general, do not change until the social consensus also changes. The requirements for a new social consensus among suppliers, buyers and

intermediaries often takes more time than technology driven change in the basic trade processes.

Communication and computing processes finally underlie and bind all the distinct processes in the exchange framework together to enable trading.

As we have seen in our case studies, the introduction of new information technology into traditional markets and auctions or making them "electronic" can alter some of the processes and disturb the overall system of exchange processes in unforeseen ways. In the case of the sample-based auction, the change in product representation had repercussions on how buyers authenticated the quality of goods and subsequently valued the goods. In the case of Exmtrade, no one considered the costs of new product representation methods and the changes in routine to suppliers. This resulted in not enough product being put on the market and the failure of the company. In the case of Vidifleur, the changes in the communications and computing processes enabling online trading led to information asymmetries between buyers on the auction floor and those trading online, which led to the failure of the auction.

In sum, even if an electronic market maker has reason to believe that it can provide a win-win-win solution for everyone involved, they would be wise to step back and analyze the process level impacts on stakeholders and devise ways to speed up the adoption of new market-making processes.

Net Implications

So what should upstart net market makers do to successfully implement exchanges? We believe there are three key things managers must focus on to successfully implement new electronic markets.

Create "real" win-win-wins

New electronic markets challenge the status quo and the existing relationships between buyers and sellers. For a new model of trading to succeed there must be buy-in from all parties—in other words, the new auction or electronic market should create a compelling value proposition for buyers, sellers, and intermediaries. This is the minimum condition for change.

At a minimum, then, new auction mechanisms must improve some or all of the basic trade processes in the process stakeholder model. Since buyers and sellers do not want to spend too much time searching or bargaining, improving the efficiency of basic trade processes such as search, valuation, and authentication creates substantial value. As in the case of Aucnet, these process improvements can lower search and authentication costs for buyers, and raise the price paid to sellers by decreasing the buyer's risk. If all players are better off, a new market has a good chance of succeeding. Where someone is left out, it does not. While, for example, Vidifleur and Aalsmeer's sample-based auctions provided a compelling value proposition to the auctioneer, neither provided significant advantages to the buyer and supplier, and thus both failed. The primary benefits to solving the logistics problems in these auctions would only accrue to the auctioneer. Thus it is vital for any market maker to carefully examine the allocations of benefits and costs as they are distributed to all stakeholders (buyers, suppliers, and intermediaries) across the process stakeholder framework. Whenever someone is left worse off by the change to electronic markets, it is unlikely a new market will succeed, unless that party is initially subsidized or faces competitive pressures to participate in the market.

As electronic procurement auctions proliferate some argue that a "win-win-win" is not necessary—and that buyer aggregation in these exchanges will force suppliers to participate for earn lower margins. We expect suppliers will trade through a variety of mechanism from electronic auctions to fixed longer term contracts—and that suppliers will make the best trade-offs available to them between reductions in margins and expanded volumes through access to markets.

Drive Quickly to Critical Mass

To succeed, electronic markets or new auctions must achieve critical mass and liquidity in the market quickly. Otherwise they will suffer the fate of ExmTrade or Nets Inc. Electronic markets and auctions become more valuable as more and more traders participate. Economists refer to this extra benefit from an added participant to all others as a positive externality. Once there are enough users to form a critical mass, most other users are likely to adopt the

market quickly because of positive externalities, creating exponential growth. On the other hand, if critical mass is not achieved quickly, the early adopters who expected to benefit from the addition of other participants are likely to abandon the market for other trading forums, causing the new market to fail. Two basic strategies are available to achieve critical mass:

- Subsidize early user adoption of the market. Subsidizing early users to join the market is one way to drive it to critical mass quickly. It may only take attracting a few key buyers through steep discounts to motivate sellers to join. Generally speaking, select the dominant suppliers and buyers as targets for subsidies. They create the greatest positive externalities, accelerating adoption by others. A related subsidy strategy for upstarts is to have a dominant buyer as a strategic investor at the outset of the new market venture. This creates commitment from the buyer to use the system for procurement.
- Increase the cost of alternative transaction mechanisms. While this strategy is rarely feasible in a competitive market place, many governments and communication monopolies have used it successfully in order to get parties to switch from one technology to another. For example, the French telephone company was able to assist the launch of its Minitel system by increasing the cost and efforts to acquire traditional paper phone directories.

Beyond the subsidy and penalty strategies for encouraging users to adopt a new system, market makers must critically consider their strategy for diversifying their markets. It is important to achieve a critical mass in a particular market segment before diversifying to other segments. Otherwise one runs the risk of failing like Nets Inc. Thus new markets and segments must be entered sequentially, with care taken to achieve critical mass in one market before addressing another.

Lower Transition Risks and Efforts:

To successfully implement a new auction, a market maker should also work to lower the risks and efforts of transition. Three specific strategies include:

- Increasing trust in product value through strict quality control

- Adopting standards to reduce technology obsolescence and integration risks
- Designing systems that integrate easily with existing procurement systems and software
- Leverage existing providers of key trade processes.

Often new market structures replace exchanges in which the buyer may have directly searched out a vendor and product. For a new electronic market to succeed, buyers must have confidence in the replacement mechanisms and the products exchanged. Strict product quality controls can enhance the buyer's confidence in the new market mechanism, when that mechanism forecloses the possibility of direct inspection before purchase. This is especially valuable for non-standard products or those that can vary highly in quality. Indeed, as illustrated by the Aucnet case, reliable quality ratings can lead to higher prices.

A second strategy to lower transition risks is to conform to technological standards. For example, developing online trading systems consistent with open Internet standards such as XML, rather than with a specialized semantic mark-up language, enhances the confidence of the new adopter that the technology will be supported, and that others will find it easy to participate.

Emerging market makers must be cognizant of the need to effectively integrate their market mechanisms with the selling and buying processes of suppliers and buyers. By designing systems which integrate with existing firm processes, market makers are likely to avoid the pitfalls encountered by ExMtrade. As companies increasingly deploy enterprise resource planning (ERP) systems, it is becoming imperative to seamlessly tie emergent electronic market and auction processes to business logic and firm processes embodied by these applications in firms.

Finally, the costs of constructing electronic markets and transitioning to them can be reduced by leveraging third parties who provide various value added exchange processes such as authentication, payment and settlement, third and fourth party logistics services. While payment and settlement and third party logistics services are already widely outsourced, we increasingly expect other services to be outsourced to third party providers such as Open Ratings for authenticating the credit and track record of buyers and sellers.

In summary, creating successful new auctions with the requisite liquidity and value characteristics is a challenging task. Managers will have to carefully attend to the critical success factors identified above, and ensure they have the resources to support critical mass and reduce the transition costs of market participants.³

References

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