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Reverse Auctions or Auctions Reversed: First Experiments by Philips

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The electronic auction is one of the most highly-promoted forms of B2B e-commerce. However, since the e-commerce bubble burst, the effectiveness of this tool is in question. This article looks at how electronic auctions can be affected by various trade-offs in sourcing strategy. Using the case of an auction by Philips, it is shown that firms still mostly have to deal with the same tensions. Even when auctions are used, regional sourcing strategies rather than global ones are the norm for most European firms. To be effective, electronic auctions should be used as part of a wider strategy, and appropriate selection criteria should be set up in advance.

Keywords: Electronic auctions, Sourcing strategy, Buyer–supplier relations, Business-to-business, Trade-offs

Introduction: Experimentation and Trade-offs in the Internet Economy

The Internet and the related possibilities of e-solutions to traditional managerial problems used to produce splendid visions of revolutionary change in end-consumer markets and the organisation of the supply chain. Optimistic and radical claims abound even from recognised management scholars. Peter Drucker (2001) professed that firms would collectively outsource more, changing the organisation of markets, whereas Michael Porter (2001) expected that e-commerce would render more transparent all markets, thus changing the nature of competition. Progress, however, has in many areas been relatively slow and the revolutionary transformations relatively modest – although certainly not absent.

What makes the present period perhaps most different from the past, is the willingness of a large number of actors to experiment with trade-offs. Hal Varian, Dean of the School of Information Management & Systems at the University of California at Berkeley, and prominent writer on the new Internet economy (Shapiro and Varian, 1999), confirms that applying it successfully remains troublesome. 'If we look at how the net is changing the nature of markets, it's not that it can't do it, but we are struggling to find the business models that work. No one has an answer to how you make money. That means it's a time for experimentation' (*Business Week*, 2001). Most popular attention on the Internet economy during the 1990s dealt with business-to-consumer applications of the web. The most promising applications, however, are now in Business-to-Business (B2B). The Forrester company for instance, predicted that the US market for business trade over the Internet would increase from $ 43 billion in 1998 to more than $ 1.3 trillion in 2004. The US is ahead in the implementation of the Internet in business relations, but European firms have in many areas taken up the challenge – albeit it generally more cautiously than their American peers.

This article focuses on the use of the Internet in sourcing strategy. It shows that next to the obvious technological progress, transformation processes involve choices in the same areas of trade-off that have always been important. In particular, electronic auctions are investigated. Electronic auctions are Inter-

net-based auctions, which, for example, occur in the context of B2B (Freemarkets) or C2C (E-Bay). They can be regular auctions, where the buyer bids, or so-called reverse auctions, where suppliers bid for a buyer's business. Furthermore, there are various bidding systems, of which the English auction is most popular.

The key question of this article is how European firms are applying reverse electronic auctions in terms of trade-off choices, especially in the context of tendering supply chain contracts. The article documents a concrete experiment of electronic bidding through a reverse Internet auction and how it was influenced by a number of interrelated trade-offs in the sourcing strategy of a prominent European company: Royal Philips Electronics. First, these trade-offs will be discussed in terms of their implications for electronic auctions. Then the case study will be presented and analysed. We finish with some implications and managerial recommendations.

Trade-offs

The early literature on electronic markets centred on assessing the influence of electronic markets on make-or-buy decisions (Malone *et al.*, 1987). It was hypothesised that rapid developments in ICT would lead both to an increased outsourcing of activities and a shift from hierarchies and longer-term co-operative relations to markets and shorter-term price-based relations as the preferred co-ordination mechanism in buyer–supplier relationships (Malone *et al.*, 1987). But the market-hierarchy dichotomy is too simplistic. More recently, authors have added to and refined the original hypothesis. The so-called 'mixed-mode' hypothesis, states that firms operate on a continuum between markets and hierarchies and increasingly use combinations of the two in their relationships (Holland and Lockett, 1997). This conforms to the notion of networks and co-operative buyer–supplier relations. No conclusive research results have been reported in support of either the original claim or the more recent version.

This discussion, however, is perhaps too one-dimensional in nature. In reality, firms that need to take a decision on whether and how to organise an auction will face multiple dilemmas. Freemarkets (2002), a leading organiser of electronic B2B auctions, identifies the following benefits for sourcing companies: 'Establish true market prices; identify immediate savings and substantial returns on investment; increase the speed and efficiency of negotiations, consolidate a supply base or introduce new, high-quality global suppliers; leverage in-depth supply market information and commodity expertise to make better sourcing decisions'. We distinguish between three dilemmas. First, firms must decide how to fit an auction into their existing strategies. Then, they need to decide what types of suppliers to accept in terms of pre-selection, which determines the control over the selection. Finally, they need to solve practical supply chain management problems, which are intertwined with the location and nature of the supplier that is chosen. Thus three trade-offs can be considered of strategic relevance to firms:

1. Strategy: short term considerations versus long term fit
2. Control: public versus private
3. Geography: global versus local.

These trade-offs build on the strategy tensions as formulated by De Wit and Meyer (1998), while adding the strategic dimensions of 'timing' (#1) to the classic OLI paradigm. That includes the control dimension in the form of Ownership (O) and internationalisation (I) of markets, in addition to Location (L) considerations. Each trade-off results in a key question and we shall explore these questions through the case study.

Strategy Trade-off: Short Term versus Long Term

Internet solutions were originally promoted as having inherent advantages regardless of organisational or product characteristics. Electronic auctions, for example, were simply associated with their cost-cutting character. Now, however, a more intricate understanding is emerging, which points to the need to fit any Internet solution with the firm's strategy (Koppius *et al.*, 1999). For example, electronic auctions may not be appropriate means for stimulating product innovation given the continuous threat of exit by the buyer. Thus, in order to assess the strategic value of an auction, one needs to assess the fit with the firm's strategy. Key elements of firm strategy in this respect include price/trust, immediate/repeated, first/second mover and buyer/supplier trade-offs.

A first and perhaps obvious issue is that of price versus trust. Auctions are primarily seen as a costcutting instrument for the buyer, which seems to be at odds trust buyer–supplier relations. For these relations to effectively operate, a mutual long-term commitment is required. But this is only a first potential problem related to the use of auctions. Next, there is the question to what extent an auction can incorporate total cost of ownership intentions. A total cost of ownership approach requires including other dimensions like costs of disposal and services, reliability and speed of deliveries. One technical solution to this problem is the multi-dimensional auction, which can be used to incorporate a number of these dimensions in the bidding process. The nature of the product will determine to what extent a multi-dimensional auc-

tion is necessary. In fact, the product may pose a natural limit on what can reasonably be auctioned as a high degree of standardisation between bidders is needed.

Auctions can often create positive immediate effects, by substantially lowering the price of the supplied product. But substantial additional savings are not likely to occur in a repeated auction, since most transaction costs are shaved off in the first auction. Another potential problem that arises in the case where the auction is primarily aimed at cost minimisation is that new entrants might undercut prices in order to get the contract and as a consequence will operate at a loss. There is a risk that the supplier cannot deliver as promised or even perishes altogether. This is commonly known as the 'winner's curse', examples of which are provided by Kern *et al*. (2002) for the case of outsourcing relations. If the supplier goes out of business this not only creates an immediate problem but also a future problem. A large number of competing suppliers must exist that keep investing in process and product innovation of products, even when they do not get the order. This enables them to remain competitive in a later auctioning round when prices will certainly be even lower. In the case of a shakeout among competing suppliers as a result of the auction the possibilities for fruitful future auctions rapidly decrease.

Furthermore, enduring savings can often only come from supply chain optimisation – something that requires co-development schemes and thus intensive collaboration between buyer and supplier. If firms that lose an auction exit from the industry, this lowers the number of competitors – and thus ultimately the effectiveness of future auctions. Therefore it is safe to conclude that the potential reach of electronic auctions is limited to cases that lend themselves to a market-like setting.

So far the effects of B2B auctions on the players are difficult to assess. The Aberdeen group (Brandel, 2002) estimated that 94 per cent of net online market transactions were through auctions and six per cent through catalogue sales. In more than two-thirds of the cases, companies hold online auctions to buy goods rather than to sell them. These are also dubbed as reverse auctions. Buyers make offers that suppliers are free to accept or not.

Another element of strategy concerns first versus second mover advantages. In the early years of e-commerce first mover advantages were seen as crucial. However, many of the first-moving companies on the Internet suffered from all sorts of start-up costs. Not many have reaped a profit, whilst technological and marketing investments have been substantial. Moreover, in the area of B2B, the common dictum in the Internet community that the first-comer/winner takes all (Kelly, 1998) does not seem to hold true. It can pay off to be more cautious and enter relatively late – certainly where a company is a leading node in a supply network. This may even be more true for the use of auctions, since any firm will have to hold a large number of auctions annually. Therefore, a good performance in the initial auction is important because of reputation effects with various stakeholders like suppliers. Instead of learning-by-doing, a firm may want to do some learning-by-observing too as mistakes can be costly.

A final element of strategy that impacts auctions, concerns who holds most power: is it the supplier or the buyer who dominates the supply chain? (cf. Ruigrok and Van Tulder, 1995). Schary and Skjott-Larsen (2001, p. 211) note that auctions might have the effect of eliminating long-term pricing dominance, but also that they might have 'negative competitive implications if suppliers face a single buyer in a vertically integrated market, or *vice versa*. These issues have yet to be resolved'. It has been observed that lack of supplier readiness has been a barrier in 89 per cent of companies wanting to engage in online auctions (*Financial Times*, 2002). But the existence of market power of the other party should be a reason to be cautious. Engaging in or initiating an auction may well run against the long-term interests of the firm.

Out of this first generic trade-off, on strategy, we extract the question to what extent is a particular electronic auction compatible with the short-term interest a firm has versus its long-term sourcing strategy?

Control Trade-off: Public versus Private

To what extent are outsourcing markets becoming open or closed to competition? Peter Drucker (2001), writing about major business trends in the 21st century, predicted that firms will join hands to collectively outsource. This limits the control of procurement departments over their suppliers in favour of lower prices and higher flexibility. Surfing on the Internet-hype, many venture-funded e-marketplaces were indeed founded, and a number of large supply consortia, such as in automobiles (Covisint), consumer packaged goods (Transora) and telecommunications (VerticalNet's Fiber Optics Online and others) were created in the late 1990s. Following the bursting of the Internet bubble, however, many venture funded e-marketplaces ran out of cash recently and went bankrupt, precipitating a probably more intense shake-out in the future (*Financial Times*, 2002). At the same time, the consortia that initiated collective e-procurement platforms face growing difficulties in funding as well as behavioural barriers to get former competitors to collaborate. Many leading firms do not participate in the consortia. Additionally, competition policy authorities like the European Commission have looked at these initiatives suspiciously.

This raises transaction costs and induces a possible danger of sanctions due to collusive behaviour. Industry consortia have not really handled substantial parts of the participants' sourcing volumes yet. According to a comment in the *Financial Times* (ibid): 'large companies (…) became concerned that public exchanges would come between them and their customers and suppliers.' One of the most vital strategic relationships a company has is that with its suppliers. As a result, the number of companies with private online B2B exchanges has increased and this is likely to become the predominant model of B2B electronic trading. General Electric, by the middle of 2001, did more business on its own private online marketplace, than all the public B2B exchanges put together (*The Economist*, 2001). The predominance of private markets also would put the statement of Michael Porter (2001) that e-commerce renders competition more transparent, in a different perspective. Private markets are inherently less transparent than public markets since they create entry barriers and use idiosyncratic procedures.

An extension of this issue concerns the question whether to use only *existing suppliers or also new suppliers*. Effective auctions are not easy to implement. They often require training of suppliers to take part in the company's auction. In case of new entrants either from other branches or from other countries, training costs may be even higher. More importantly, however, it is not always easy to switch suppliers. The costs to switch from existing or known suppliers to new suppliers can be substantial. Should a company wait to invite new suppliers to later auctions, with the risk of putting less pressure on existing suppliers to lower their prices, or immediately invite them, with the risk of either not receiving appropriate offerings or facing increased training costs? There are costs attached to evaluating the offers of unknown suppliers, which should be added to the cost picture of the auction. In general, supply chains are built on networks of longer-term relationships and are based on familiarity. Yeung (1998) for instance, when looking at Asian supply networks, concedes that networks of relationships precede and hold primacy over the development of electronic information systems. The family and other personal bonds prevalent in Asia might not be entirely valid in the European context, but we can still expect switching to be difficult.

"One of the most vital strategic relationships a company has is that with its suppliers"

The key question of interest on this second trade-off is therefore: when is organising a closed market with well-known suppliers better than the case of a market open to all participants?

Geography Trade-off: Global versus Local

The traditional tension in international management has been between global and local. In day-to-day practice, international sourcing managers casually mix up two outsourcing concepts that relate to different geographical categories: just-in-time and global sourcing. Just-in-time involves local sourcing (also referred to as 'one day trucking'), which poses very different managerial demands from global sourcing. The trade-off is influenced for instance by the degree of standardisation needed or envisaged in the outsourcing relationship. In reality, global outsourcing is still not a very prominent strategy in particular because of the high transaction costs and risks involved in dealing over long distances (Mol and Van Tulder, 2002). Lowering production costs is only one of a long list of sourcing goals. It is particularly relevant for outsourcing to low wage countries that provide the opportunity for low cost supplies. However, this strategy involves a number of additional transaction risks due to institutional deficiencies locally, for instance in the form of unstable currencies. A variety of hedging devices exists that allow for reducing risk and moderating volatile exchange rates. Yet the number of countries and currencies for which these techniques are available is relatively limited and many emerging countries, that might provide cheap supplies, are not included (Schary and Skjott-Larsen, 2001, p. 360).

Bartlett and Ghoshal (2000) tried to move beyond the global versus local debate, by presenting a transnational 'stool' combining three legs: global (taking advantage of economies of scale and scope), multinational (being sensitive to the need for local adaptation), and international (engaging in continual innovation and flexibility). This requires managerially complex models that may not always be easy to implement. But for European producers a partial solution to many of the geography trade-off problems may be easier than anticipated. With the opening up of Central and Eastern Europe after 1989, a regional supply basis of low-cost, relatively high skilled, and eager suppliers suddenly came within reach. This also opened the debate under which conditions CEE producers would become integrated in EU production networks: as rivals substituting for EU producers (and thus also substituting EU jobs) or as complementary producers – often entering in a lower tier of the supply chain (Zysman and Schwartz, 1998). Some observers have been rather sceptical about the possibilities of firms in transition economies becoming suppliers to EU producers for more advanced components. On the other hand, many governments, in particular in the group of countries that are lined up to be the first to become full mem-

bers of the EU (Hungary, Czech Republic, Poland and Slovenia), have been successful in attracting FDI over the course of the 1990s. Part of this investment is aimed at the local market, but most is aimed at (re)exporting to the west. The function of these new subsidiaries in the changing European business networks is not yet well understood.

The key question flowing from this third trade-off is what implications the geography trade-off has for the range of feasible supplier locations in an electronic auction.

The Case: Philips Electronics

This article proceeds by using the case study methodology, which is mainly concerned with explanatory 'how' and 'why' questions (Yin, 1988, p. 18). A case study is a research strategy focussing on 'understanding the dynamics present within single settings' (Eisenhardt, 1989, p. 534). Generally the case study method is considered best suited to (1) investigate a contemporary phenomenon within a real-life context, (2) when the boundaries between phenomenon and context are not clearly evident, and (3) when multiple sources of evidence are used (Yin, 1988, p. 20). The earliest European experiences with electronic auctions can only be researched through case studies because of the very contemporary character of the topic, and also because of the limited number of auctions that have occurred. The experience in Europe with sourcing auctions is not yet extensive. The number of companies that have actually taken part in auctions is estimated at 6 per cent, according to a 2001 survey among purchasing managers (*Financial Times*, 13 March, 2002). In the US, the number is higher. This case study attempts to illustrate the auctioning process and the consequences of electronic auctions on buyer – supplier relations. The case study of Philips is based on multiple interviews, a public roundtable discussion and secondary materials. All these materials were gathered in late 2000 and early 2001.

Today, Philips, the focal firm in this case, is officially based in Amsterdam, but the core of its activities is still in Eindhoven, the city in the south of The Netherlands where it was founded. Philips is one of the few large European firms in professional and consumer electronics to have survived cut-throat competition with American and Japanese firms. In many product areas, the company derives a strong competitive edge from its technological achievements that are primarily researched and developed in-house. Since the early 1990s, Philips, traditionally quite vertically integrated, has actively pursued a stepped-up outsourcing strategy in order to reap the profits of more efficient suppliers and to create flexibility by holding the option to switch suppliers. Initially, however, this strategy emerged out of crisis management. Philips was at the brink of bankruptcy in the early 1990s. In practice, many 'new' outside suppliers were the old in-house suppliers. This did not raise flexibility much and it was open for debate whether prices went down at the required level given the absence of price incentives. Slowly, in the 1990s, Philips started to focus on strategic sourcing. But the firm is still far removed from its ultimate goal, which is to 'build to order' as pioneered by companies like Dell and Cisco. Efficient, flexible and enduring relations with 'contract manufacturers' – as Philips calls its suppliers – in particular in consumer electronics and medical systems should pull the firm closer. Electronic sourcing might help to bring purchasing closer to the strategic aims of Philips. The present case looks at the way in which Philips Medical Systems (PMS) has tried to use reverse auctioning to find a more effective way to manage relationships with suppliers. The case study explores the various stages of the auctioning process and the consequences on price, supplier choice, and geographical spread.

Background

PMS is a division of Philips with a 1999 turnover of 2.5 billion Euro and some 11,800 employees. The 1999 divisional earnings before taxes amounted to 225 million Euro. PMS is a very research-intensive organisation. In 1999 it spent 7.9 per cent of its sales on R&D expenditures. In 2000, PMS completed three major acquisitions in the US by buying Medquist, Agilent Technologies and ADAC Laboratories. This further strengthened its position globally and particularly in North America. PMS has plants in four sites: Best (near Eindhoven) and Heerlen in The Netherlands, Seattle in the US and Hamburg in Germany. PMS products include Ultrasound, MR, CT, IT and X-ray machines. PMS is the world's number 3 player in medical systems behind GE of the US and Germany's Siemens. In Europe, only Siemens has a larger market share than Philips. The total size of the markets PMS operates in globally is an estimated 17.5 billion Euro, of which modalities (the main PMS products) make up 10 billion Euro.

The X-ray products, which will be the focus of attention here, are produced in both Best and Hamburg. The case being discussed deals with three types of X-ray machines produced in the Hamburg plant. The electronic X-ray equipment is stored in 19-inch cabinets. For cabinets, 19 inches is a fairly standardised size, which will also be found in many offices. PMS uses a tailor-made variant of the 19-inch cabinet, which has fewer features than the full-fledged, universal 19-inch cabinet and is therefore usually cheaper than the universal cabinet. The cabinets have not changed much in basic appearance or materials used over the last few decades. However, there have been changes in the production process, with the increased use of CAD/CAM machines, automated

cutting and other new process technologies. The three major steps in the production process are cutting steel plates, painting and varnishing them and then final assembly. Specifications of the cabinets PMS buys change every year or so. Furthermore, the specifications are slightly different for each of the three types of X-ray machines.

Since the early 1980s, PMS had been buying the cabinets from the same supplier, Stork Industrial Modules (SIM), a business unit of Stork. Stork is a large Dutch industrial conglomerate with many business units that are engaged in a wide range of services and production activities, including machine building and engineering. The 1999 turnover of Stork was 2.4 billion Euro. Like that of Philips, the firm's stock is traded in Amsterdam through Euronext. SIM is a part of the Aerospace group, which had a total turnover of 364 million Euro in 1999.

SIM has the explicit goal of being a first-tier supplier and attempts to manage the supply chain for its customers. Its three main areas of production include electronic cabinets & covering, mechatronic modules and machines, and outdoor products, which includes for example telephone booths. SIM has two sites in The Netherlands, in Eindhoven (SIM headquarters) and nearby Helmond, as well as a production facility in Poland. Furthermore, it often collaborates with another Stork business unit, Stork Electronics, to produce joint modules. Throughout the almost twenty years that SIM produced this product the relationship between PMS and SIM could be characterised as positive and collaborative. This can partly be traced back to the fact that the two major Dutch industrial firms Philips and Stork meet regularly to discuss all kinds of topics and often have joint interests in public or government affairs. To some extent, there is also a historical connection because parts of Philips had been sold to Stork. However, the relation between PMS and SIM was not very intensive because hardly any product innovation occurred over the 20-year period. So there was little or no exchange of engineering capability or joint problem-solving, which is so typical of value-adding relations.

Case Description

PMS was first introduced to an electronic auction when it participated in a workshop organised by the Technical University of Munich together with a number of large German firms, including banks. Having seen the savings one bank made on its electricity bills due to an auction, PMS became interested and decided to scan its product portfolio for possibilities to conduct its own electronic auction. Several items were seen as potential targets for an auction but some were not possible for practical reasons, like long-running contracts, and for others the purchasing value was simply too low to profitably organise an auction. Outside of Bill-of-Materials purchasing Philips uses quite a lot of centralised, company-wide contracts and for those PMS could of course not hold its own auctions. PMS had decided that the minimum annual purchasing value would have to be around 0.5 Million DM (250,000 Euro). The 19-inch cabinets appeared to be one of the few items for which both the purchasing value (several million Euro) and buying conditions were appropriate. PMS decided to give the electronic auction a try, and obtained two auction slots from TU Munich, which acted as the auctioneer. One of these slots was never used due to technical problems. Mr. Ludwig Binder, purchasing manager of PMS Hamburg admitted the auction was something of an experiment. However, he also suggested that the outcomes proved PMS made the proper decision.

“Having seen the savings one bank made on its electricity bills due to an auction, PMS became interested…”

As PMS was planning to source this type of cabinet for another two years, it decided to hold a single auction (tender) for 3700 units over a 2-year period. To this end, 10 suppliers were selected. Nine of these suppliers were certified by PMS, through earlier purchases or RFQs by PMS Hamburg or Best. PMS people visited all of these nine suppliers at some point in the two years prior to the auction. The tenth supplier was a Rumanian supplier that PMS met at a trade fair. PMS was not aware of its capabilities but decided to include it ‘to obtain a benchmark price’. It never intended to actually choose that supplier. In retrospect, it turned out that this firm was a supplier to other large multinational firms, including Siemens (although not to its medical division). The final list of 10 participants was agreed upon by the purchasing department and the development department. None of these 10 suppliers had any previous experience with electronic auctions. The suppliers were fully informed two weeks prior to the auction. Suppliers were not allowed to communicate during the auction and bids were anonymous to PMS during the auction. All suppliers were under the obligation to make at least one bid in the auction, which would last for a minimum of one hour with a maximum one hour duration.

At SIM there was no such thing as a warm welcome for this initiative. To SIM the announcement came as a shock because it was not previously informed about PMS's plans in this area. Hans Büthker, general manager of SIM responded in the following way:

Well, you can imagine that if you have been supplying a product for 20 years and feel that you have a certain kind

of relation with your customer, this comes as a surprise. You're somewhat shocked. When we received these materials two weeks in advance, our first response was: if it's going to be like this, we best quit now.

However, SIM decided to participate nonetheless in order to 'obtain some experience with this new tool' but also to show that it classifies the medical industry as a strategic industry for its business. SIM made some calculations and decided it could take another 7 per cent off the price in order to remain profitable. SIM did not expect anyone to go much lower than 7 per cent below the current price level, which was consistent with PMS's expectations, which were a price reduction in the range of 10–12 per cent. In fact, PMS set a 10 per cent minimum reduction from the previous price before it would change its source, which it defined as its commitment to the incumbent supplier.

Outcomes

Apart from Stork and the Rumanian firm described earlier, the participants in the auction were two Danish firms, a Spanish firm, a Czech firm, a Slovakian firm, two German firms and another Dutch firm. The Slovakian firm had informed PMS in advance that it did not believe in the auction tool and could only reluctantly be convinced to participate at all. However, the Slovakian and Rumanian firm strongly influenced the auction pattern. The auction pattern is given in Figure 1.

The Slovakian firm had decided before the auction to what price level it was willing to bid and directly advanced to that level. Only the fact that there was a 5 per cent threshold level for every 5 minutes slowed down the price drops. As described above, SIM had decided in advance that it would go no further than 7 per cent below its old price level. Some of the other firms also had their own reasons to limit their bids. In the end, only the Slovakian firm, the Rumanian firm, a Danish firm, and a German firm competed for the lowest bid. Just when the price seemed to stabilise towards the end of the auction, the Rumanian firm made another price drop that made it win the auction with a bid that was 29.4 per cent below the original price. However, given that it was not certified, it could never have won the order in the first place. The order was awarded to the second highest bidder (the German firm). Given the general price level of the other Northern European bidders, this German firm appears to be somewhat out of range since it bid 25 per cent below the old price level. Its bid can be explained by specific circumstances. This firm owns a plant in Hungary that was not utilised to its capacity before the auction. Since the firm had capacity to spare, it decided to make a lower bid than it could normally have made given its cost levels. The firm was satisfied to regain only part of the fixed costs it was incurring, which was rational from its perspective.

After the auction ended there was brief contact between PMS and SIM when Mr. Binder visited SIM in Eindhoven. SIM was provided with a final opportunity to cut its price level, but declined to do so. PMS maintains that if SIM had gone down to 15 per cent below the original price, there may have been a lot of discussion on whether or not to switch suppliers. Another disagreement between the two parties

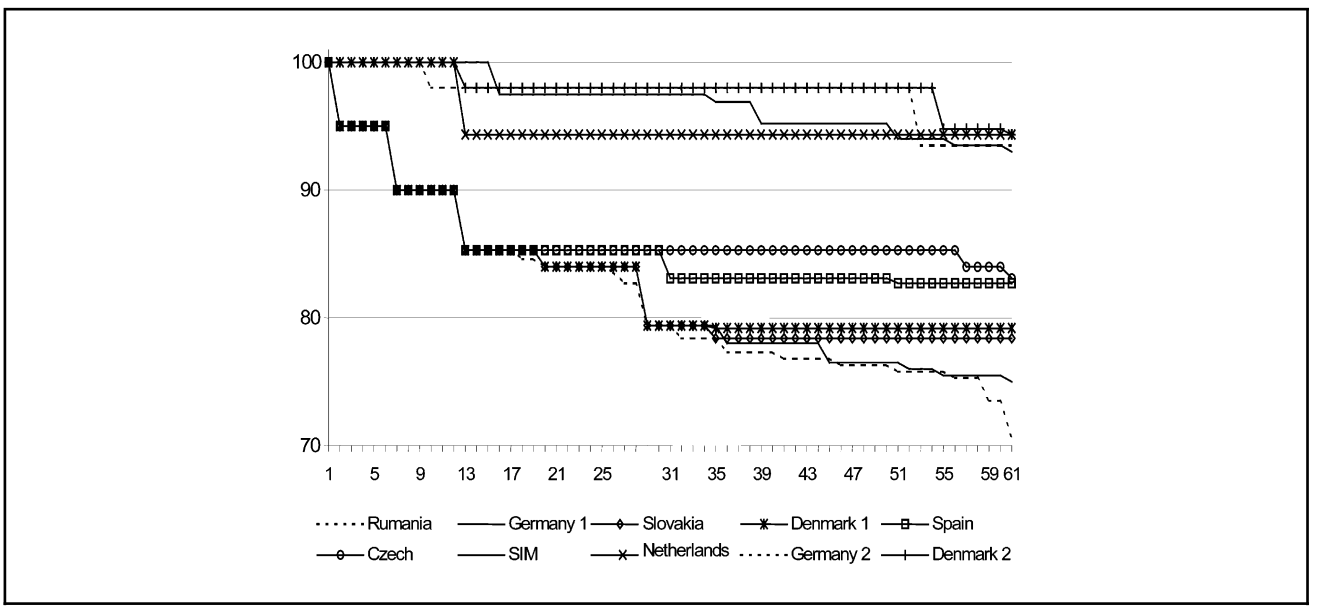

Figure 1 Auction Pattern.
On the horizontal axis, the minutes the auction have lasted are portrayed while the vertical axis contains the percentage from the original price. The different participants all have their own price line, with Rumania making the lowest final bid (70.6 per cent), then Germany 1 and so on.

centres on the final order for cabinets that PMS placed with SIM. A rather large quantity of cabinets was ordered from SIM after the auction was finished and the decision to switch suppliers had been made. While PMS maintains that it had been offered the opportunity to order more cabinets by SIM, SIM said that PMS had demanded the extra load to build up inventory in case the new supplier was unable to deliver the cabinets at the right time and quality. The relation between SIM and PMS was terminated after the auction. Although the two parties still meet regularly, if only by being located so close to one another, there is no ongoing co-operation anymore. SIM has phased out the product. Interestingly, in the aftermath PMS faced some serious start-up problems with the new supplier. The first prototypes did not function up to standard. All of this could obviously be solved, but this required some additional management effort.

Implications from the Case

The relationship between PMS and SIM was terminated because both parties could not foresee any future improvements to make it worthwhile to continue the commitment. This appears to be a major departure from the situation as it was. However, several interesting things emerge on both sides of the relationship. PMS conducted a previous audit that signalled SIM's product offering might not be competitive anymore. Furthermore, the electronic auctioning process forced PMS to review its entire product portfolio in a structured manner with the explicit objective of identifying candidates for the auction in terms of potentially realisable savings. The cabinets emerged as the prime candidate. Both things seem to suggest that PMS, rather than introducing a major change at that time, was perhaps several years late in considering a change of supplier. If PMS had more closely monitored market developments in cabinets, it might have been tempted to consider switching at an earlier point. Obviously achieving the lowest possible costs in purchasing these cabinets was not a high priority at PMS in previous years.

> *"The electronic auction is more a carrier or catalyst of changes than an engine for change"*

From the perspective of SIM these cabinets were a product at the low end of its technology range. Compared to relations with other buyers, including high-tech firm ASML, this was a relatively static situation. In fact, nothing much had changed over the course of 20 years. The fact that SIM has now decided to phase out the product entirely, instead of trying to improve its competitiveness, is telling in this respect. It is interesting to note that moving production to the plant in Poland was never considered, not before the auction, not during the auction and not after the auction. This is indicative of the low management priority given to retaining the product and also of the unwillingness to move any production activities from The Netherlands to Poland. The latter would probably cause internal resistance and social unrest. The conclusion is that the product was simply not considered a core product of SIM even though the industry it was produced for was defined as a core customer.

Both parties witnessed changes in the outside world over the 20-year time period during which SIM delivered the cabinets to PMS. Sourcing became more international and many new technologies and products were introduced. After 1989, Central and Eastern Europe increasingly became a part of the European economic space. Customer demand for medical products has altered and the nature of competition in the market has changed too. Buyer-supplier relations are increasingly seen as a potential source of competitive advantage. Both buyers and suppliers increasingly pursue co-operative buyer–supplier relations. But this relationship hardly changed. Perhaps the most intriguing question coming out of this case study is why nothing changed for so long. The changes that occurred as a consequence of the auction could have come at a much earlier time. Viewed this way, the primary function of the electronic auction is to speed up processes that were somehow inevitable. The electronic auction is more a carrier or catalyst of changes than an engine for change. This is not to say the role and impact of the auction is marginal. This auction did in fact have a significant impact on both firms. This impact is perhaps mostly related to the way these firms think about using electronic auctions in buyer-supplier relations. Their awareness of electronic commerce and electronic auctions in particular has increased dramatically.

Conclusions

The value of experimentation is obvious in this case. But has the underlying auctioning model, a badly needed experiment (Hal Varian), worked and what could its future be? For the outsourcer in the short-run it delivered the expected cost cut. The incumbent supplier was not particularly delighted with the process or the result as it felt it did not get the opportunity to change its strategy to accommodate for e-commerce. The new supplier faced initial difficulties to deliver according to expectations. Referring to the three generic trade-offs Philips and its suppliers faced and experimented with, the following conclusions can be drawn.

Strategy Trade-off: Short-term versus Long-term

PMS obtained its desired cost saving, in fact the outcome was far beyond what it had expected. On the other hand, the case shows that the auction implied the incumbent supplier lost turnover and decided to stop producing the goods altogether. Thus, there is one supplier fewer. Furthermore, it appears that most of the possible savings have now been realised, since all parties agree that the obtained price is very low, indeed it may be below the cost price given the temporary capacity surplus that determined the winning bid. Repeated auctions thus become less feasible because there are fewer bidders and lower potential savings. Furthermore, Philips should anticipate helping its new supplier with setting up a new production line.

The pricing dominance of the supplier is clearly substituted for by buyer dominance in the present case (Schary and Skjott-Larsen, 2001). The case shows that the original supplier had less room for price changes than desired by the buyer, which in the end even resulted in the exit of the original supplier. Whether this was really the aim of Philips is unclear. The cabinets were clearly not strategic or advanced components for PMS, although the supplier disagrees. On the other hand, SIM phased out a product for an industry that it had identified as 'strategic'. This may be related to the fact that SIM was an unwilling participant throughout the process. Electronic bidding and auctions contain a risk for the purchasing firm, because they can lower the long-term innovative potential of suppliers, which might turn out to be problematic if the cabinets are further integrated with electronic equipment into one module. Once the balance tips in favour of short-term relations and prices, this seems difficult to change, particularly when newcomers win the auction on the basis of excess capacity in a low wage country.

Control Trade-off: Public versus Private

PMS clearly opted for a private and relatively closed market for its reversed auction. In one sense competition became more transparent due to e-commerce, as Michael Porter suggested, because all players could observe the pricing process. However, there are private considerations behind the various bids and PMS pre-selected certain suppliers and ruled out others on the basis of non-price considerations, both of which are not signs of transparency. These other criteria were not included in the bidding process and remained hidden. Thus, the competition was certainly not truly transparent. This is bound to reemerge in future auctions although multi-dimensional auctions may prove to be a partial solution for this.

Geography Trade-off: Global versus Local

The tension of global versus local in this case has clearly been resolved by a regional logic. In practice, a wide variety of hybrid forms exist, not necessarily covered by the third, international, leg of the transnational stool of Bartlett and Ghoshal (2000). The case shows the importance of shared institutions and predictable environments since only European firms participated in the auction. Intra-regional competition affected the supplier selection process in two ways: (1) by pressing the other firms to lower their prices, (2) by offering the possibility to one producer of excess capacity that could be used to undercut competition. The substitution effect, however, is not complete. Jobs at Stork were offset by jobs at a German producer and its Hungarian supplier. The producer from a second-tier country like Rumania had a clear function in the dynamics of the auction, but remained a non-credible supplier.

Will Philips be able to use electronic auctions to their full extent and still stay a technological leader in mass markets? Philips has to deal with the paradox of outsourcing on the basis of price, with an end-product strategy on the basis of innovation. As such, the strategic aim of 'build to order' is not easy to achieve. The 'build to order' strategy is primarily applied by companies that have optimised the distribution system, but have not aimed at end-product innovation. Whether Philips is prepared to accept a similar outcome in other product areas – which might involve a serious drawback to its innovative capacity – remains to be seen.

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References

Bartlett, C. and Ghoshal, S. (2000) *Transnational Management*. (3rd ed). McGraw-Hill, Chicago.

Brandel, B. (2002) *Net Market Liquidity: Best Practices*. The Aberdeen Group, Boston.

Business Week (2001) March 26, p. 57.

De Wit, B. and Meyer, R. (1998) *Strategy: Process, Content and Context*. International Thompson, London.

Drucker, P. (2001) The next society. *The Economist*, September 15.

Eisenhardt, K. (1989) Building theories from case study research. *Academy of Management Review* **14**(4), 532–550.

Financial Times (2002) Survey: Information technology: part 2, 13 March, pp. 1 – 20.

Freemarkets (2002) http://www.freemarkets.com/en/benefits/sourcing/default.asp, accessed on May 24th, 2002.

Holland, C.P. and Lockett, A.G. (1997) Mixed mode network

structures: the strategic use of electronic communication by organizations. *Organization Science* **8**(5), 475–488.
Kelly, K. (1998) *New Rules for the New Economy: 10 Ways the Network Economy is Changing Everything*. Fourth Estate, London.
Kern, T., Willcocks, L.P. and Van Heck, E. (2002) The winner's curse in IT outsourcing: strategies for avoiding relational trauma. *California Management Review* **44**(2), 47–69.
Koppius, O.R., Mol, M.J., Van Heck, E. and Van Tulder, R. (1999) Electronic sourcing strategies in life sciences and chemicals: auctions, three cases and a model. Paper presented at the *Carnegie Bosch Institute bi-annual Conference*, October 21–23, San Francisco.
Malone, T.W., Yates, J. and Benjamin, R.I. (1987) Electronic markets and electronic hierarchies. *Communications of the ACM* **30**(6), 484–497.
Mol, M.J. and Van Tulder, R.J.M. (2002) Solution in search of a problem: global sourcing. *European Business Forum* **9**, 56–60.
Porter, M.E. (2001) Strategy and the Internet. *Harvard Business Review* **79**(3), 62–78.
Ruigrok, W. and Van Tulder, R. (1995) *The Logic of International Restructuring*. Routledge, London/New York.
Schary, P. and Skjott-Larsen, T. (2001) *Managing the Global Supply Chain*. Copenhagen Business School Press, Copenhagen.
Shapiro, C. and Varian, H.R. (1999) *Information Rules: A Strategic Guide to the Network Economy*. Harvard Business School Press, Boston.
The Economist (2001) 30 June, p. 10.
Yeung, H.W. (1998) Business networks and transnational operations: a study of Hong Kong firms in the ASEAN region. *Economic Geography* **73**(1), 1–25.
Yin, R.K. (1988) *Case Study Research: Design and Methods*. Applied Social Research Methods Series, Vol. 5. Sage Publications, London.
Zysman, J. and Schwartz, A. eds (1998) *Enlarging Europe: The Industrial Foundations of a new Political Reality*. University of California at Berkeley Press,, Berkeley.

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