

AUCNET: ELECTRONIC INTERMEDIARY FOR USED-CAR TRANSACTIONS

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INTRODUCTION

As the advent of nearly ubiquitous information infrastructures promotes the development of electronic commerce applications, new electronic market intermediaries are emerging which bring significant changes in the economics of marketing and distribution channels by interposing themselves between suppliers and consumers in electronic marketplaces (Rayport and Sviokla 1994). On the one hand, these electronic intermediary services can increase efficiency for search, contract formation and trade settlement involved with market transactions (Lee and Clark 1996a). On the other hand, the electronic intermediary services create new transaction risks (Lee 1997a).

Successful implementation of electronic intermediary services requires not only information infrastructure for electronic trading but also developing institutional policies and processes to reduce newly created transaction risks. This paper introduces AUCNET (Lee 1997b), an electronic intermediary for second-hand car transactions, in order to illustrate that electronic intermediaries should provide mechanisms to structure, organize and legitimate these activities, as well as offering IT infrastructure.

AUCNET

USED-CAR AUCTION MARKETS IN JAPAN

Japanese consumers generally purchase second-hand cars from licensed used-car dealers. A complex web of title registration and regulation makes direct trading of second-hand cars between individuals difficult. Avoiding risks of hidden defects and securing financial loan also encourage Japanese consumers to deal with reliable used-car dealers. New car dealers typically sell trade-ins to used-car deal-

ers rather than reselling them to consumers. Besides trade-ins, these new car dealers often register a block of new cars as "used" cars and sell them to used-car dealers in an attempt to meet sales quotas at the end of a selling period. Most of the 9 million second-hand vehicles that changed hands in 1996 were sold through the 20,000 licensed dealerships in Japan.

Retail used-car demand is becoming increasingly differentiated in Japan, and used-car dealerships are specialized in late model cars, sports cars, four-wheel-drive cars, or even a particular make and model of car. Direct sales between used-car dealers are limited: dealers are not inclined to rely on their competitors' inventory, particularly those selling to the same market segment. However, relationships often develop between dealers selling non-competing lines. A specialized dealer would sell a trade-in that does not match his/her chosen selling profile to other dealer (specializing in that type of car), rather than diluting his/her image by selling it to a customer. The other dealer would then reciprocate with trade-ins that do not match his/her chosen market segment. But most urban dealers, if the car desired by the consumer is not in inventory, typically go to an auto auction site to locate additional product inventory.

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The aggregate volume of cars sold at auto auctions has been increasing at about 20% annually over the past decade. In 1996, over 4 million cars were offered for sales and more than 2.2 million vehicles worth ¥1,615 billion were sold through 144 auto auction sites in Japan. In traditional auto auctions, buyers and sellers are assembled at a central auction site. Cars are brought onto the auction floor one at a time. Most buyers personally inspect the cars prior to the auction. Cars are sold by English auctions: the auctioneer starts with a low price and continues to increase the bid price until the highest bid is registered. Most large auto auctions use a POS (point of sales) system, introduced in late 1970s, in which buyers press a POS button to register their bid, instead of raising their hands.

EVOLUTION OF AUCNET

AUCNET was built by the late Masataka Fujisaki, an entrepreneurial used-car dealer (Warbelow and Kokuryo 1989). Fujisaki started in used auto business in 1967, building Flex Auto in Tokyo. In 1985, he founded AUCNET with a goal to establish an auto auction business utilizing computers and advanced communication technology to be used by second-hand auto dealers to buy and to sell inventory in the wholesale market. He foresaw that the redesign of the auto auction process using an on-line auction system would significantly improve the market efficiency of used-car trading.

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. Only subscribed dealers, who pay a flat monthly fee of ¥49,500 for the equipment and the satellite network operation, are allowed to sell or to buy cars through AUCNET. The operation flow of the AUCNET is shown in Figure 1. For the seller, the first step in the process is to apply for the consignment to sell cars through AUCNET. The consignment costs a seller ¥7,500 for each car. Once the consignment application is received, AUCNET dispatches one of its mechanics (either full-

time employees or contracted inspectors) to inspect the offered vehicle. The inspector takes several photos (exterior and interior shots) of the vehicle and assesses the condition of and damage to the car. The evaluation result is summarized in a single number, between 1 and 10. The consignors (seller) has to pay ¥2,500 for each inspection.

The inspection results (images and text data) are then entered into the central computer for the auction catalogue editing. The electronic auction is held four times a week (Saturday through Tuesday). The auction catalogue, which shows information on all cars to be sold and the time block (auction schedule) they would be sold in, is transmitted to all members through satellite links every Friday morning. If a dealer is interested in a specific car listed in the catalogue, he/she can preview its images and text-based information, including detailed inspection results, from his/her computer terminal.

During the electronic auction, buyers and sellers remain at their respective businesses. To attend the electronic auction, buyers use buttons on top of joysticks in their PCs that are connected to the central computer of AUCNET. Buyers bid by pressing the button on the top of joysticks, which will increase the current bid by ¥3000. As the bid price approaches the reserve price, the system informs the bidders that the car would actually be sold if bid is raised slightly more. Finally, when the time between bids reaches a certain threshold, the system selects the last high bid as the winner, and the auctioneer announces that the car is sold (voice signal) with text signal of "SOLD" flashed on the screen. It typically takes about 20 to 25 seconds on average to auction off one car.

A car sold by AUCNET remains at the seller's location until the electronic transaction is completed. Sellers then have a transport company deliver purchased cars directly to buyer locations. Successful buyers and sellers receive a report detailing the transaction within two days. Buy-

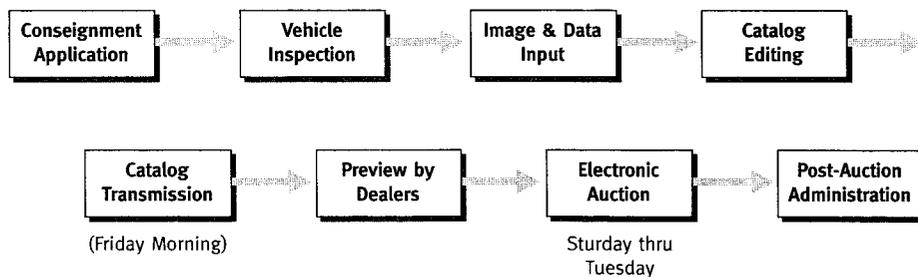


Figure 1. Market Transaction Process in AUCNET

ers have to pay funds to AUCNET upon receiving the report. Sellers are paid from AUCNET once they send the document (title of the car) to AUCNET. Both seller and buyer have to pay ¥7,000 for each successful transaction. AUCNET occasionally provides dealers with a negotiation arrangement, in which unsuccessful bidders ask (on the phone) AUCNET to open negotiations with sellers whose cars remain unsold.

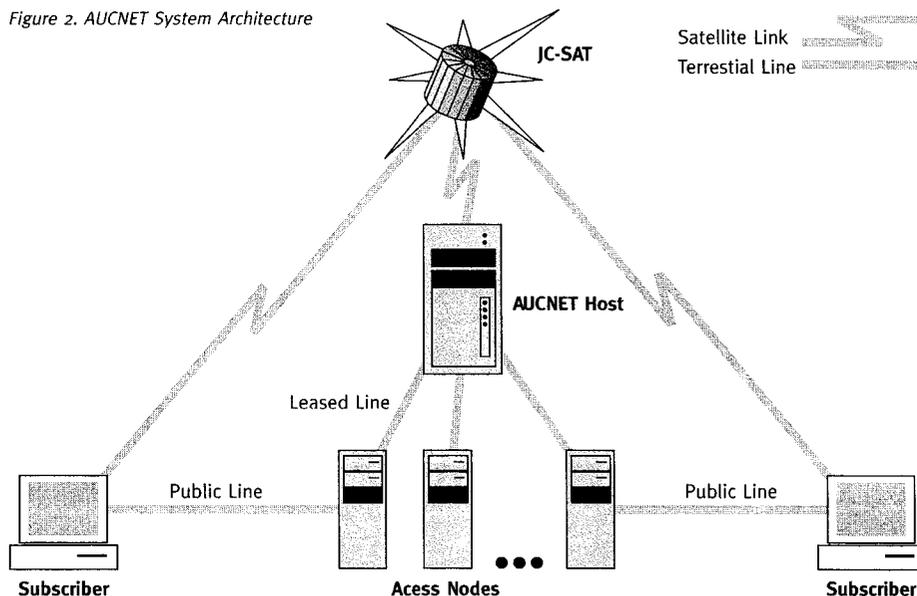
AUCNET SYSTEM ARCHITECTURE

AUCNET's network consists of satellite and terrestrial transmission lines (see Figure 2). Satellite links are used to broadcast car images and voice signals from AUCNET to member dealers (one-way broadband communication), while text-based data transmission between dealers and the AUCNET host computer uses ground lines (two-way narrowband communications).

The satellite network is operated by Japan Business Television Inc. (JBTV), a subsidiary of AUCNET which splits a single 27 MHz transponder from JC-SAT into 4 full motion TV channels. AUCNET currently uses two channels out of the four. One channel is used for the fax transmission of the auction catalogue as well as for real-time auctions. The other channel is used for preview by car dealers.

The terrestrial lines carry input (bidding signal) from the buyers' joysticks to AUCNET, and feed back the results of the bidding process (such as current bid price) to all market participants. The character-based information on the cars, which is overlaid on the image displayed during the auction process, is sent from AUCNET's computer to subscribers via the ground lines. The terrestrial lines are also used for dealers to access the post-trading data-

Figure 2. AUCNET System Architecture



base (text data), which displays the information about recent transaction results of a specific model (minimum price, maximum price and average price and so on). AUCNET installed 41 access nodes around Japan to reduce terrestrial communications costs. Regional dealers call into the nearest access node via public telephone connections. Data from dealer terminals are aggregated at access nodes, and sent on to the AUCNET's central host computer at the Tokyo operations center. Access nodes are connected to the AUCNET host computer via dedicated lines (DDX lines) from NTT.

AUCNET'S PERFORMANCE

AUCNET started its service in May 1985 with 560 dealer members. It listed 33,458 vehicles in 1986 with 14,944 cars sold. Since then, AUCNET's throughput (listed cars) has increased at an annual compound growth rate of 26%. Figure 3 shows the AUCNET's performance over the past five years. In 1996 AUCNET listed 249,677

vehicles, of which 48% (118,840 vehicles) were sold through electronic auctions at an average price of ¥1,493,000 per car. The membership network among dealers has continued to expand at a rate of about 100 per quarter, reaching 4,850 of 20,000, so about 24% of dealers at the end of 1996.

AUCNET has become the largest among 144 auto auctions in Japan. In 1996 AUCNET's market share accounted for 6.2% (number of vehicles listed in AUCNET to that offered to all 144 auto auctions), which is much higher than those of the large non-electronic auto auctions. USS Tokyo, which was the second largest auction market (traditional and non-electronic market) in 1996, reported a market share of 4.2%. AUCNET has carved out a niche in the top end of the wholesale used-car market using computer and advanced communications technology without owning a single parking space to store cars to be auctioned.

EVALUATION

BENEFITS OF MARKET PROCESS INNOVATIONS

AUCNET has provided IT infrastructure that enables used-car dealers to separate vehicle movements from the auction process. This IT-enabled market process innovation has provided dealers with strong incentives to join AUCNET services by significantly reducing costs involved with the wholesale used-car trading. AUCNET has created an electronic intermediary service that increases the efficiency of the search, negotiation, contract formation and settlement of used-car transactions.

Search:

AUCNET's strength over traditional auto auctions is its ability to facilitate the search for cars by used-car dealers. Attending physical auto auctions is a time consuming process for most dealers. Because there is no precise schedule for when certain cars would be sold, a dealer may need to attend a traditional auction the entire day to bid on only one or two cars. Since the AUCNET auction catalogue (including auction schedule) is distributed in advance, used-car dealers can limit their time involved in the auction process to only the cars they are interested in buying. When a car desired by a client is not in his stock, a dealer can download the data and images of offered cars through the satellite network, show the information to his/her customer, and include the car in his/her bidding list based upon the client's request.

Furthermore, AUCNET provides member dealers with valuable post-transaction information. At any time, dealers can access the database that displays information on the most recent five transactions of the same model, including their quality characteristics and prices paid by buyers (minimum price, maximum price and average price). This post-trading information keeps dealers well informed on the market price of goods with specific characteristics of interest to buyers or sellers.

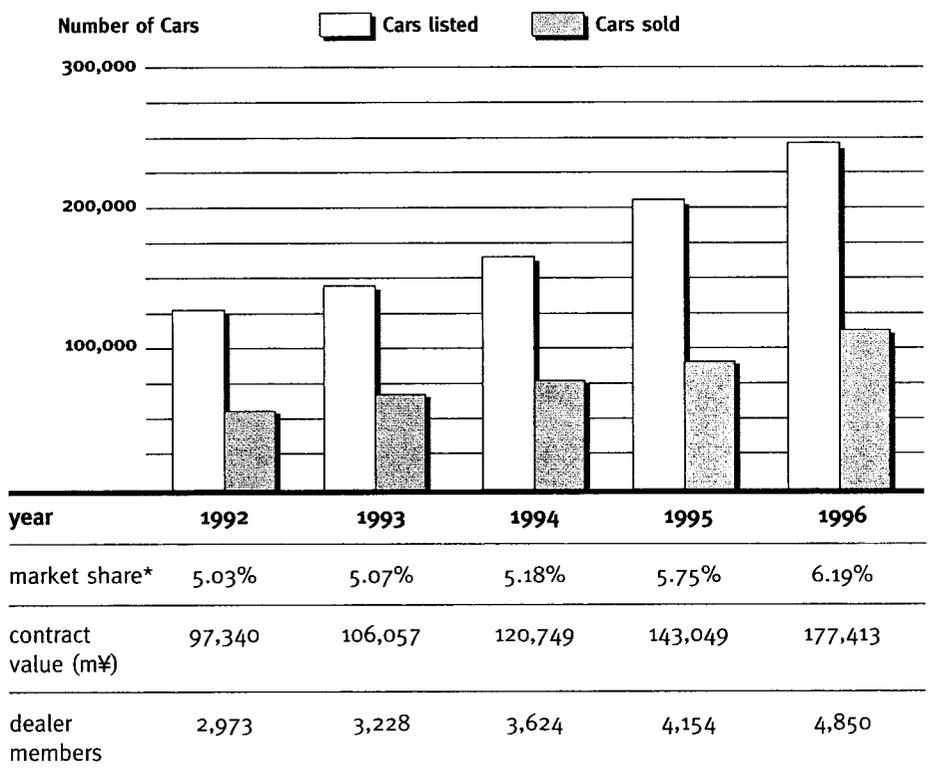


Figure 3 AUCNET's Performance

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Contract Formation:

Sellers who brought their cars to the traditional auto auctions were often forced to accept prices lower than their reserve prices since the transportation cost of bringing the products back home was high. The separation of transportation of cars from the auction process enables sellers to keep their reserve prices relatively firm. This is partly reflected in AUCNET's slightly lower contract rates and higher contract prices than traditional auto auctions. In 1996, 55% of cars registered in traditional auto auctions were sold (at the average price of ¥675,000 per car), while AUCNET sold 48% of cars listed (with an average price of ¥1,493,000 per car).

In return, AUCNET provides buyers with more choices. Most traditional auto auctions in Japan are located in metropolitan areas where it is becoming increasingly difficult and costly to secure parking spaces for vehicles for sale. Thus, traditional auctions have limits in the number of cars offered to markets. AUCNET created the largest auto auction without a single parking space, listing 249,677 cars in 1996. AUCNET can easily accommodate an increasing sales volume, with expected annual growth rate of 15% projected over the next five years. This contrasts with traditional auto auctions whose parking capacity limits the number of offered cars. As a result, buyers in AUCNET enjoy greater vehicle choices than are available in regional auto auctions.

Trade Settlement:

Used-car sellers in traditional auto auctions had to bear high transportation costs to move a car to the auction site and back again if it was not sold. In 1996, over 4 million cars were brought to the auction, of which 2.2 million cars were sold. Around 1.7 million cars (45% of cars brought to the auction) remained unsold and had to be transported back to sellers' sites, thus incurring significant transportation costs to sellers. AUCNET eliminated this unnecessary transportation cost by decoupling the logistics from the market transactions.

INSTITUTIONAL RULES AND POLICIES

Although technological competency was a necessary factor for AUCNET's success, the firm's ability to translate technical feasibility into institutional realities was real challenge in creating this new market. Separation of car transportation from the auction process using computer and communication technologies was revolutionary to most dealers who used to come to auction sites for trading cars. To overcome resistance and suspicion over the new market process, AUCNET had to invent new institutional rules and policies in addition to cost-effective electronic networks. AUCNET's institutional rules include standards for product evaluation and rules for legitimizing electronic contracts.

Product Evaluation:

Before the advent of AUCNET, Slide Auction which had been implemented by traditional auto auctions ended in a failure in the used-car wholesale market. The Slide Auction, which also intended to decouple the transportation of cars from physical auction processes, held auctions by using 35 mm color slides shown to buyers present in auction sites for bidding. One reason that the Slide Auction failed was that buyers did not trust slides adequately represented the product: buyers were unable to judge the quality of cars offered through slides (Lee and Clark 1996b). Thus, AUCNET focused from the start on standardizing the product representation and inspection process to establish trust for information of cars listed in its electronic auction system.

Used-car sellers must have their vehicles inspected by AUCNET mechanics. The inspection results are summarized in a single number between 1 and 10 (10 indicates a new car, and a car rated 5 or 6 could be resold to the consumer without additional work). Most buyers use this number as the key decision variable when buying a car, even though more detailed results of the inspection are available. To reduce the transaction risks of buyers fur-

ther, AUCNET targets relatively high quality cars for its services. A car whose inspection rate is lower than 4 cannot be sold on AUCNET. The high average price of the car sold on AUCNET, compared to traditional auto auctions, indicates that the vehicles sold in AUCNET are of higher quality.

Legitimation of Electronic Contracts:

Policing and enforcement of transactions are important parts of the AUCNET's institutional policy. Used-car dealers executing transactions through AUCNET are subject to institutional rules that legitimize electronic contracts made within AUCNET and protect member dealers from trade defaults. The execution of electronic contracts is enforced through the agreement to specify responsibilities of parties and the terms of settlements. Anyone who violates the rules is left out of the market process and is fined. Because the opportunity to trade on AUCNET is of great value, the withholding of permission to access AUCNET is a sanction sufficiently severe to ensure compliance for most member dealers.

After a car is sold through electronic auction, the winning bidder is required to press the second button on the base of his/her joystick to indicate confirmation of the bid. If the successful bidder fails to do this, any further bids he or she would make in the auction would be blocked. Because the shipment of cars is separated from the payment, AUCNET regulates the execution of electronic contracts in great details to reduce financial risks of involved parties. A successful seller who has sold a car in AUCNET should send the vehicle to buyers on the same day or the next day. If the seller fails to do so (e.g. if the seller happens to find a more favorable buyer and wishes to nullify the deal made), he or she will be fined ¥100,000 for violating the contract, which goes to a would-be buyer. Otherwise, sellers are guaranteed payment by AUCNET. Thus, AUCNET pays for the car even before it receives funds from buyers to reduce financial risks for sellers.

A buyer who has purchased a car from AUCNET has five days to pay funds to AUCNET. If the payment is delayed, the buyer is charged a penalty for the prolonged payment. If the buyer nullifies the electronic deal, he or she is fined ¥50,000, which goes to the would-be seller, and has to bear all the cost caused by the canceled deal, such as transportation cost for returning the car back to the would-be seller. These rigid rules to structure and legitimize the electronic contracts help traders build up trust with AUCNET (the new market intermediary), enabling dealers to execute transactions with trading counterparts with whom they do not have pre-established business relationships.

CONCLUSION

Market transactions involve contractual agreement and the exchange of property rights. Market intermediaries need to provide mechanisms to structure, organize, and legitimate these agreement and exchange activities (Williamson 1979). When new intermediary firms introduce on-line trading systems in the industry value chain, they reengineer the traditional transaction processes by decoupling product flows from market transactions. In electronic commerce me-

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diated by market making firms, buyers and sellers place bids and offers via terminals connected to the host computer of the intermediary, instead of coming to a physical market site. Goods are sold through either electronic negotiations or electronic auctions without physical presence of offered products. In this virtual marketplace, transactions take place based on information (descriptions) and products move from sellers directly to buyers only after on-line transactions are completed. The electronic intermediaries initiate this market process innovation to separate the product movement from transactions by utilizing computers and advanced communication technologies.

However, this market process reengineering can increase transaction risks too, such as distorted product information or insecure trading settlement. Successful electronic intermediary services require institutional rules and policies which not only guarantee correctness of product information but also enforce execution of transaction deals made within electronic market facilities. Carefully designed institutional policies and rules account for much of AUCNET's success.