

MARS INCORPORATED: ONLINE PROCUREMENT¹

Professor Peter C. Bell prepared this case solely to provide material for class discussion. The author does not intend to illustrate either effective or ineffective handling of a managerial situation. The author may have disguised certain names and other identifying information to protect confidentiality.

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Version: (A) 2005-01-25

Mars Inc., (Mars) one of the world's largest privately owned businesses, purchased more than \$4 billion of materials annually. Ed Ng, vice-president of Business Solutions at Mars was aware that many major firms were achieving savings of around five per cent through the use of online procurement auctions. Ed wondered whether an online auction could be designed that would meet the special needs of the company while enabling Mars to achieve the savings necessary to allow the company to prosper and grow in its highly competitive markets.

MARS INCORPORATED

Mars began making buttercream candies sold door-to-door and had grown to include leading global businesses in food, pet care, drinks' vending and electronic automated payment systems. In the United States, Mars operated as Masterfoods USA and in Canada as Effem Inc. Mars' well-known brands included Mars, M&M's, Twix, Milky Way, 3 Musketeers and Snickers candy bars; Waltham pet care products and Whiskas and Pedigree brands; Uncle Ben's branded rices, pasta selections, stuffing mixes and sauces; Kliz and Flavia brands of hot and cold drink vending systems; and state-of-the-art electronic payment systems that were used in telephone booths, public transit ticketing systems and vending machines.

¹*This case has been written on the basis of published sources only. Consequently, the interpretation and perspectives presented in this case are not necessarily those of Mars Inc. or any of its employees.*

Mars had grown from a \$300 million business in the 1970s to a \$14 billion business in 2002. Mars operated its business in 100 countries, based on five core principles:

- Quality — “The consumer is our boss, quality is our work, and value for money is our goal.”
- Responsibility — “As individuals, we demand total responsibility from ourselves; as associates, we support the responsibility of others.”
- Mutuality — “A mutual benefit is a shared benefit; a shared benefit will endure.”
- Efficiency — “We use resources to the full, waste nothing, and do only what we can do best.”
- Freedom — “We need freedom to shape our future; we need profit to remain free.”

Mars’ Web site² provided the company’s rationale for its extraordinary success: “Mars’ business triumph comes from living up to the promises that each brand makes to consumers. Millions of consumers rely on our brands daily and reward us with their loyalty for the outstanding quality and value for money they receive.” Mars employees were “associates” who wanted to “bring just a little bit of joy to everyone that comes into contact with us.”

PURCHASING AT MARS

Mars’ five core principles formed a framework for guiding supplier relationship management and purchasing negotiations. The bulk of Mars’ \$4 billion annual direct material purchases came from a small number of highly valued suppliers who dealt with the Mars Supplier Development department. Buyers representing two or three products maintained supplier relationships and were also responsible for the development of new sources of supply. Maintaining relationships with highly valued suppliers reinforced the Mars culture of mutually shared benefits.

Many different contracts and negotiations were used to address the huge number of different purchasing situations involving private businesses, brokers, governments, monopolies and cartels. Often a supplier would work with a buyer over a long period to forge an agreement on a contract and the relationship issues (e.g., delivery conditions, quality specifications, customer service issues, payment terms, price, best fit of supplier skills and buyer requirements, joint development work, information sharing).

²<http://www.mars.com>, accessed on July 23, 2003.

Mars recognized that this approach had many benefits but also some weaknesses. Weaknesses that had been identified included the fact that the endpoint of negotiations was somewhat arbitrary and could lead to situations where another valued supplier found out that a competitor had been awarded a contract under terms that it would have been prepared to better. Further, one-on-one negotiations did not allow leveraging of competitive supply conditions, and did not always allow for supply synergies or economies of scale across different business or brands. Finally, much negotiating time often centered on price and quantity but it was recognized that this was an area where auction mechanisms provided an efficient means of settlement.

ONLINE PURCHASING AUCTIONS

Many firms used online auctions for part of their purchasing; well-known examples include COVISINT, the procurement site for the U.S. automakers, John Deere and Company, and PetroVantage, a procurement site for the petrochemical industry. Sites such as these conducted “reverse” auctions where a single buyer and a set of pre-qualified suppliers negotiated at a private Web-based exchange. (A “reverse” auction was one where low bidder won, as opposed to the more common auction, for example, for works of art, where high bidder won.)

While the actual auction mechanisms varied from site to site, the buyer typically put a supply contract (an RFQ or request for quote) up for bids on the procurement Web site. Potential suppliers were issued with a log-in password and accessed the site, placing their bids to supply the RFQ. The auction closed at a preset time or when no further bids appeared, and the winning bidder was selected. In some cases, the current low bid was available to all bidders and bidders had to remain online and keep track of the current low bid if they wished to retain the possibility of winning the contract. In other cases, each bidder submitted just a single bid and the winning bid was one bid-increment (the bid-increment was specified in advance by the buyer) below the second lowest bid.

Auctions were generally thought to make the purchasing process more efficient but the brute force reliance on price often caused serious difficulties among suppliers. Firms using auctions recognized that maintaining good working relationships with suppliers often required additional efforts. John Deere, for example, had a team of consultants who worked with suppliers to help them with their bids and help suppliers streamline uncompetitive processes so that their bids could produce more profitable work.

Mars had experience with online auctions through a subsidiary, Freight Traders (www.freighttraders.com), an online transaction system for shippers and carriers implemented in May 2000. An online auction for the procurement of part of the \$4 billion of materials purchased annually would have to be easily accessible

worldwide, conform to Mars' unique culture, be fair and mutually beneficial to all parties involved and show significant benefits in results and execution time for Mars' buyers.

DEVELOPING AN ONLINE AUCTION FOR MARS' MATERIALS BUYING

Mars' objective was to obtain the needed materials from its list of approved suppliers fairly and at minimum cost. It was critical that any auction was open and followed Mars' principle of mutuality: the benefits of the auction were shared between Mars and its suppliers, and the suppliers were not squeezed to the point of no return.

The standard reverse auction, with a single RFQ and low bid winning, appeared suitable for those materials that Mars purchased in very large quantities (for example, sugar and cocoa). However, many items purchased by Mars' buyers (packaging, for example) were small lots, and it was too time-consuming to both Mars and its suppliers to deal with each lot separately. Mars' buyers therefore aggregated the individual lots into larger RFQs so that the dollar value was of interest to a supplier who agreed to supply the RFQ for one price. Mars attempted to aggregate individual small lots in a way that benefited suppliers but different suppliers had different requirements and different opportunities for efficiencies. For example, all packaging for one brand was printed in the same colors and so there were printing setup economies to a supplier who restricted attention to one brand, but another supplier may have equipment that better suited certain package sizes and would provide quantity discounts on lots aggregated by package size. Mars thought that an important feature of any auction would be to issue RFQs for each individual lot, no matter how small, and the suppliers could perform their own aggregation of the individual RFQs and provide a single bid on whatever set of RFQs they choose to combine.

Mars did not want to become dependent on just a few suppliers. It wanted the option to enforce a minimum number of winning bidders in any auction, but at the same time did not want the administrative overhead of dealing with too large a numbers of suppliers after an auction. In addition to limits on the numbers of suppliers, Mars also wanted the ability to limit the total dollar amount won by any one supplier in order to reduce its exposure. There was also a minimum total amount of business from each auction that would be economically beneficial to a supplier: for example, if a major supplier submitted bids for many different bundles but was low bidder on only one small lot of packaging, representing less than a full truckload, the supplier would be better off not winning this single lot.

These considerations produced a preliminary auction design. A Mars buyer would list the RFQs to be purchased on the auction Web site. Suppliers would be invited to visit the site, select those combinations of products that they wanted to bid on,

and submit their bids. Since suppliers might want to combine the individual items into several different bundles, each supplier could submit multiple bids. When bidding activity had ceased, Mars would close the first round of the auction and determine the set of bids that met their requirements. This provisional set of winning bids and the bundles they represented would then be communicated back to the suppliers who could then reformulate their bids in a second round of bidding. This process would continue until there were no more bids.

This sequential round-by-round auction required the development of two additional rules. First, in the event of a tie, the first bid submitted would be the winner, and second, after the first round of an auction, any new bid needed to be at a price that was at least some minimum amount less than the current price. It was also recognized that the lowest cost set of bids could over-satisfy Mars' requirements for some items but if inventory holding costs were low, this could be acceptable or even desirable. For those items that were strictly one-shot purchases, Mars would, however, require the ability to limit purchases to the lot amount.

DETERMINATION OF THE WINNING BIDS

A number of technical issues had to be solved to implement the Mars procurement auction. The most difficult of these was the problem of finding the cost-minimizing set of bids that met Mars' business requirements and determined the winning suppliers. Exhibit 1 contains an illustrative example of the first round of an auction. How could Mars determine the winning bids? Further, when the auction went live, Mars would have just a few minutes to determine the winning bids for larger problems (up to 500 items and 5,000 bids). How could the low-cost set of bids that satisfied Mars' business criteria be found in one or two minutes?

Exhibit 1**ILLUSTRATIVE EXAMPLE OF A MARS PACKAGING AUCTION****Items in the auction (all items can be oversupplied):**

- Mars display boxes:
 - 1,000 large
 - 2,500 medium
 - 4,000 small
- M&M display boxes:
 - 800 large
 - 1,500 medium
 - 2,500 small
- Snickers display boxes:
 - 400 large
 - 750 medium
 - 1,200 small
- 3 Musketeers display boxes:
 - 100 large
 - 100 medium
 - 50 small

First Round Bids received:

- 1:05 p.m. Supplier 1 bids \$2,050 to supply all Mars display boxes.
- 1:06 p.m. Supplier 2 bids \$350 to supply Snickers small display boxes.
- 1:10 p.m. Supplier 3 bids \$1,199 to supply all large display boxes.
- 1:11 p.m. Supplier 1 bids \$220 to supply Snickers large, and all 3 Musketeers display boxes.
- 1:14 p.m. Supplier 4 bids \$4,639 to supply everything.
- 1:20 p.m. Supplier 2 bids \$199 to supply 3 Musketeers medium and small display boxes.
- 1:26 p.m. Supplier 5 bids \$1,199 to supply all M&M, and 3 Musketeers medium and small display boxes.
- 1:35 p.m. Supplier 6 bids \$1,350 to supply Mars, M&M and 3 Musketeers small display boxes.
- 1:40 p.m. Supplier 3 bids \$350 to supply Snickers medium display boxes.
- 1:41 p.m. Supplier 7 bids \$2,200 to supply Mars and M&M large and medium display boxes.
- 1:52 p.m. Supplier 2 bids \$999 to supply M&M medium and small display boxes.
- 1:59 p.m. Supplier 5 bids \$1,700 to supply all small display boxes.
- 2:00 p.m. Auction first round closes.