

MarketProwess Case Study for Industrial Products Trading Exchange

Results:

MarketProwess can identify significantly better trades, yielding up to as much as a 10% reduction in total cost per unit than price only mechanisms, even with limited data and limited flexibility.

This MarketProwess case study for an industrial products trading exchange revealed value and benefits beyond any e-commerce product on the market today. The Prowess Software results showed that not only can our product identify trades that bring a significant total cost reduction, but also when preferences and flexibilities are added, greater supplier choice becomes available, even with limited data. Specifically:

- Buyers realize trades that are more aligned to their company's true needs
- Richer trades yield previously overlooked suppliers
- Constraints and flexibilities are combined to come up with the optimal trade
- Quantitative and qualitative criteria are factored in
- Indirect costs are reduced

The Existing Problem:

Today's e-commerce auctions focus on the enhanced automation of process links on a multi-party transactional plane (one-to-one, one-to-many, or many-to-many) without improving flexibility, collaboration and synchronization across the entire chain. They are appropriate for purely price-driven exchanges and simple transactions. There is no real integration with ERP or other internal systems, much less supply chain coordination and optimization across external trading partners. As a result of these shortcomings, the value delivered to end-users by market makers and e-procurement companies has been limited.

The MarketProwess Solution:

MarketProwess has a substantial advantage over existing tools in the market today because it provides a mechanism that allows buyers and sellers to achieve highest-value trades. Prowess Software features multi-dimensional matching, flexibility and trade-off analyses based on proprietary algorithms. The MarketProwess solution delivers value by enabling trading hubs to host complex transactions.

Our Case Study Scenario and Analysis:

We began our case study with a search for three aluminum parts. We generated four purchase scenarios, each based on emphasizing different variables. Each new scenario added variables and therefore increased the complexity—and the completeness of the analysis.

- 7 suppliers that carried 3 aluminum parts, i.e., 3 products per supplier
- All 3 parts had to be sourced from a single supplier
- Lead times over 40 days were not considered

- The adjusted bid value was calculated based on quantity, piece part price and tooling

The same general assumptions were used across all 4 scenarios. In addition to the general assumptions, detailed assumptions were used for suppliers 5,6,7. Suppliers 5,6, and 7 offered price discounts based on volume purchased. Group A differed from Group B in that supply chain assumptions were added to the analysis.

General Assumptions:

- Minimum lot sizes did not impact the results because order size was greater than minimum lot quantity
 - Any buyer's request beyond the minimum lot size can be met exactly
- Flexibilities were considered in taking 3 options surrounding union contracts into account
 - No union contract
 - Yes, but not up for negotiations in the next year
 - Yes, and up for negotiations in the next year
- Volume discounts were added for suppliers 5,6,7

Detailed Assumptions for Suppliers 5,6,7: price discounts based on volume

Supplier	Discount for Item 1	Discount for Item 2	Discount for Item 3
5	\$0.8 up to 40K units \$0.75 above 40K units	\$1.22 up to 225K units \$1.20 above 225K units	\$0.5 up to 200K units \$0.47 above 200K units
6	\$0.77 up to 60K units \$0.75 above 60K units	\$1.198 up to 215 units \$1.10 above 215K units	\$0.53 up to 300K units \$0.49 above 300K units
7	\$0.72 up to 65K units \$0.70 above 65K units	\$1.198 up to 215 units \$1.00 above 215K units	\$0.51 up to 300K units \$0.49 above 300K units

Group A and Group B Scenarios:

Our two groups consisted of specific scenarios with specific objectives. Group A included both qualitative and quantitative factors. Group B measured the gains obtainable with MarketProwess through quantifiable costs, estimated by incorporating supply chain cost data.

Group A Scenario: Group A measured quantitative and qualitative factors.

Scenario 1. What supplier would be selected if only the lowest piece point price per unit was considered?

- Piece part price only
- Auction-based transaction

Result: Supplier 4 was selected because narrow trading perspective focuses on minimizing unit price.

Scenario 1:

Key	Engineer	Terms	Quantity	Price	Lead Time	Defects
-----	----------	-------	----------	-------	-----------	---------

Preferences						
Hard constraints	Eliminate N		X		Eliminate > 45 days	
Flexibilities	Y/Ongoing	Strongly pref. Net 60		Lowest Price (=+-\$0.01)	25 +-15 days	0+-30

Scenario 2. What supplier would be selected if the 3 variables were price flexibility with minimum defects around desired lead time? (price+lead time+quality)

- Multi-dimensional match, with flexibility

Result: Supplier 3 was selected. A different supplier is selected when low defect levels and favorable lead times are preferred over low prices.

Scenario 2:

Key Preferences	Engineer	Terms	Quantity	Price	Lead Time	Defects
Hard constraints			X		Eliminate > 45 days	Eliminate >15
Flexibilities	All	Moderate pref. Net 60	50K+-10K, 205K+-50K	Lowest Price (=+-\$0.2)	35 +-3 days	0+-2

Group B Scenario: Group B measured the gains obtainable with MarketProwess through quantifiable costs, estimated by incorporating supply chain cost data. The results, shown below, underscore the value of building on variables, that is, adding preferences and flexibilities.

Supply Chain Assumptions: Applied to the entire supply chain:

Cost Center	Amount
Freight costs	5-10% of product cost
Cost of capital	15%
Inventory carrying costs	25% of inventory
Reliability	% on-time delivery @ \$50,000/day of downtime
Quality	for every part over 5 parts per 100,000, there is a cost of 0.5% of product cost

Scenario 3. This scenario was the same as scenario 1— lowest possible "total cost"—but with the additional consideration of supply chain cost assumptions.

- Total cost of purchase associated with a piece part price only trade

Results: Supplier 4 was selected. A baseline for comparison with a multi-dimensional analysis is established.

Scenario 3:

Total Cost	Total Unit Cost	Freight Costs	Capital Costs	Inventory Costs	Reliability Costs	Quality Costs
\$568,247	\$431,311	\$43,131	\$5,392		\$34,500	\$53,913
(0.81 per unit)	76%	8%	1%	0%	6%	9%

Scenario 4. This scenario was the same as scenario 2—price+lead time+quality—with different flexibilities, plus supply chain considerations. That is, to identify suppliers who provide products with the lowest possible cost, acceptable lead time and minimum defects.

- Total cost of purchase for a multi-dimensional match incorporating flexibility

Results: Supplier 7 was selected.

A 10% cost reduction was achieved by relaxing volume constraints and considering cost of quality and lead time impact. In other words, a trade-off occurred between inventory carrying costs vs. acceptable lead times and quality.

Scenario 4:

Total Cost	Total Unit Cost	Freight Costs	Capital Costs	Inventory Costs	Reliability Costs	Quality Costs
\$518,429	\$471,500	\$33,005	\$5,894	\$6,459	-	\$1,572
(0.73 per unit)	91%	6%	1%	1%	0%	0%

Group A Summary of Conclusions:

MarketProwess identified two different winning suppliers based on adding variables (complexity) regarding the buyer's preferences and suppliers' capability, showing the difference between a simple price-based analysis, and a more complete analysis that incorporates other purchasing variables.

Group B Summary of Conclusions:

MarketProwess identified trades yielding 10% reduction (savings) in total cost per unit; total cost dropped from \$0.81 to 0.73 per unit.

Bios Group's MarketProwess is a patented, Web-enabled tool that provides next-generation solutions by delivering value through adaptive, collaborative commerce. These breakthroughs are possible by capitalizing on the opportunities and vast information resources offered by the interconnectivity of today's Web-based economy.