



**WHOLESALEERS:
MAXIMIZE PROFITS WHILE
MEETING VOLUME TARGETS**

1.0 INTRODUCTION

A wholesaler's objective is to deliver their sales plan at maximum profit. The challenge is to manage complex interactions between supply and storage constraints, volatility of delivery schedules, short notice from trading of exchange volumes, requirements to maintain price image, need to avoid creating arbitrage opportunities between terminals, need to meet volume commitments to contract customers, need to respond quickly to cost changes and to competitor discounting, as well as huge volumes of data.

Need optimization approach specifically designed to address issues of fuel industry where supply chains are integrated with limited storage capacity and where inventory is highly volatile and the penalties for run-outs and hold-ups are large. Price is a key lever to key product moving through the system. Question is how to manipulate this lever to achieve the desired run rate at maximum profit. In basic terms, you want to achieve short term tactical manipulation of prices to deliver volume plan at maximum profit. When sales drop below plan, you need to drop some prices to get back on plan. Which prices should you decrease, and by how much, to get back on plan at minimum margin cost. When sales run ahead of plan, you need to increase some prices to get back on plan. Which prices should you increase, and by how much, in order to realize maximum margin benefit from a given amount of volume reduction

Although the work described in this paper is based on data available in the public domain, additional customer-specific factors may be incorporated to further improve the models and tailor them to individual customer needs.

2.0 APPROACH

Step 1 – define the correct business objective

- Either maximize replacement profit or maximize in-tank profit (which is equivalent to maximizing revenue)

Step 2 – identify the freely priced channels

- Rack pick-up fuels
- Unbranded posted rack sales in US
- Spot fuel sales
- Delivered fuel sales to homes, farms, small businesses
- Dealer sales

These are the channels in which you can manipulate price to manage the sales plan at maximum profit

Step 3 – identify the flexibility in volume targets

- Identify how many price decisions will be used to control a single sales volume target
 - how many terminal/product/channel combinations will be managed with a single volume target
 - terminals on an open stock pipeline system can all be managed within one total sales target for a given product, so that opportunities to buy volume cheaply at more elastic terminals can be offset by opportunities to gain margin at less elastic terminals, thus maximizing profit
- Similarly freely priced channels served out of a single tank can all be priced within one total sales target
- Identify flexibility to manage sales plan across time – what is appropriate length of planning period within which to meet a defined sales plan. Depends on delivery schedules, degree to

which these are known and cost structures.

- Managing a sales plan over a number of days creates additional flexibility to smooth out supply disruptions and demand volatility so as to maintain profit whilst still meeting the plan, again offsetting opportunities to buy volume cheaply on more elastic days against opportunities to gain back margin on less elastic days.
- Decide whether plan period should be fixed or rolling.
- So for example, if purchasing a fixed volume on a 5 day moving average Platts price then a standard approach is to aim to sell 20% of the contract volume on each of the next five days at some minimum margin to Platts. Optimization with a fixed 5 day planning horizon, but with flexibility to sell a bit or more than 20% on each day can increase total gross profit by exploiting margin opportunities on less elastic days and making up the volume on more elastic days.
- Alternatively, in an integrated operations where the terminal is being continually supplied by a refinery, it may be more sensible to use a rolling planning period in order to maintain a target run-rate at maximum profit, whilst providing flexibility to smooth out supply and demand fluctuations
- More combinations of price decisions within one sales target = more flexibility = more scope to increase profit whilst meeting sales plan (may require re-organization of process or infra-structure)

Step 4 – identify constraints on price, volume and margin

- Supply constraints – maximum volume for sale based on current inventory and supply schedule – typically by terminal and product

- For delivered fuels take account of truck availability – typically by terminal and channel
- Storage constraints
- Price constraints – target range against competition in order to maintain price image
- Differential price ranges against own products at same or other terminals in order to avoid creating arbitrage opportunities for customers with the ability to lift from multiple terminals
- Differential price ranges against own products in other channels, e.g. in order to avoid cannibalizing sales from contract channels in which customers have monthly quotas after which they are free to lift from spot channels

Step 5 – margin modeling, identify price waterfall items

- Material costs – identify correct product, in particular model accurate cost for blended products, identify correct base for cost – replacement or in-tank
- Take into account flexibility to source from alternative spot supply regions, e.g. at terminals which can be supplied by different pipelines
- Delivery and storage costs
- Strategic reserve costs
- VAT, excise and duties
- Take account of flexibility to purchase additional supply from other wholesalers at (possibly) higher cost than spot, so for instance identify situation in which demand amongst your customer base at a given price exceeds your supply availability, but you have the option to purchase on exchange from another wholesalers at a cost which would still be profitable for you

Step 6 – take account of all available short term demand information

- Update run rate against plan with latest sales data, in particular intra-day lifting data
- Take account of cost changes during the day, i.e. spot price changes. In markets where prices are generally changed over-night, demand can rise and fall quickly during the day in response to spot price changes as customers anticipate the corresponding next day price change. If you are able to predict these changes in intra-day demand, then you can manage the volatility and capture margin by more effective pricing
- Take account of intra-day competitor price moves or discounting and respond to them appropriately

Step 7 – timely implementation of prices

- Ensure your price notification mechanisms, and your contracts, give you the flexibility to adjust prices intra-day in response to changes in demand patterns

Step 8 – real-time update of demand models

- Maintain models of demand to distinguish terminals, products and channels on basis of core demand and willingness to pay
- Update these in light of seasonal changes and in light of observed changes in customers’ sensitivity to own and competitor prices

3.0 EXAMPLES

Single Output, Inventory clearing price

(Below we also run intra-day optimization for this example)

Terminal A, Unbranded ULSD LED

Inventory = 650000 gals
Target Price Range = 2.7778 +/- 0.005

Optimal Price = 2.772812 (down by 0.004988)
Optimal Volume = 619515
Optimal Margin = 286
Base Price = 2.7778
Base Volume = 595039
Base Margin = 3242

It gains 24476 gals at cost of \$2957 in margin, but still doesn’t meet the sales target because it hits price constraint

Single Output, Intra-day Inventory clearing price

Terminal A, Unbranded ULSD LED

Revised Inventory Target at 6am on 21/11/2007 on basis of intraday sales = 525000 gals
Target Price based on now known actual FLNTHLSRS price = 2.785 +/- 0.005
Optimal Price = 2.79 (up by 0.005)
Optimal Volume = **539340**
Optimal Margin = **9519**
Base Price = 2.785
Base Volume = **561478**
Base Margin = **7102**

Multi Output, Inventory clearing price

Outputs:

1. Terminal B Unbranded ULSD – inventory = 70000
2. Terminal A Unbranded ULSD – inventory = 380000
3. Terminal A Unbranded ULSD LED – inventory = 650000

Total Inventory = 1,100,000 gals
Spot Price = 2.7326

Item	Price	Optimal Price	Base Volume	Optimal Volume	Base Margin	Optimal Margin
A ULSD	2.7738	2.7688 (down)	64844	68850	289	-38
B ULSD	2.7878	2.7925 (up)	393569	385984	13952	15516
B ULSD LED	2.7778	2.7678 (down)	595039	645166	3242	-2936
Totals			1,053,452	1,100,000	17,484	12,542

Optimal prices meet sales target. It pushes B ULSD up and B ULSD LED down because the former is less elastic and the latter more elastic

Baseline is 46,547 below target. Optimizer gains this volume at cost of -\$4941 in margin

Unit margin at optimal prices = \$0.011402 per gallon

Compare with an alternative scenario in which we try to meet the target of 1,100,000 manually by pricing B ULSD at -0.005 below target, A ULSD at -0.005 below target and then doing a single clearing price calculation on B ULSD LED. Get the following results

Item	Price	Optimal Price	Base Volume	Optimal Volume	Base Margin	Optimal Margin
A ULSD	2.7738	2.7688 (down)	64844	68850	289	-38
B ULSD	2.7878	2.7828 (down)	393569	401734	13952	12233
B ULSD LED	2.7778	2.7709 (down)	595039	629416	3242	-943
Totals			1,053,452	1,100,000	17,484	11,252

The prices in this scenario also meet sales target. But it is less cost effective to gain sales by reducing price on B ULSD since it is less elastic than B ULSD LED

The difference in margin between the optimized prices and the manually set prices is \$1291 (=12,542 - 11,252)

Unit margin at prices in this scenario is = \$0.010230 per gallon

Gain in margin in optimized scenario versus manual = \$0.001172 per gallon

4.0 CONCLUSIONS

The application of competitor price prediction to the targeting of rack price positions has been demonstrated to deliver measurable quantitative benefits as well as qualitative pricing process improvements. These benefits result from a significant reduction in the variability of

price around a desired target, reducing the instance of excessive price deviation (which unchecked could lead to lost margin or lost volume depending whether the price variation is downwards or upwards) and an increase in the number of occasions when the desired target is met.

Adopting reliable techniques for estimating competitor prices will also provide greater control over the inevitable variability around the same targets, resulting from differences in predicted versus actual competitor closing positions. The methods outlined in this white paper have been demonstrated to fulfill these goals - they can also act as an invaluable source of knowledge regarding the market positioning and pricing behavior of key competitors.

5.0 RECOMMENDATIONS

KSS Fuels recommend the introduction of straightforward measuring and monitoring techniques to establish a baseline of how well price targets are currently being met, as the basis for locating opportunities to improve the existing process and identifying potential gains from a more sophisticated approach such as competitor price prediction. Applying advanced decision-support tools will improve an organizations ability to meet price targets as well as help in validating whether the targets themselves are consistent with corporate performance goals.

Having this kind of system in place will also permit automated early warning of specific issues or trends (whether by terminal, analyst, competitor or otherwise) that will enhance the responsiveness and effectiveness of the pricing process. In support of these goals therefore we recommend the following:

- (a) create a baseline of current pricing performance by measuring the ability of each

- analyst, and the company as a whole, to meet its price targets;
- (b) schedule daily updates of this analysis and distribute in summary form to those responsible for performance;
 - (c) configure alerts to situations where performance falls outside user-defined tolerances;
 - (d) analyze the performance over time to establish any trends with respect to key market factors;
 - (e) use the analysis to appraise individual analyst and/or team performance.

Establishing the baseline referred to in (a) above involves the following steps:

1. Systematically gather and store relevant own and competitor price

2. Organize the data in a form such that it can be efficiently analyzed – by rack, competitor, product and channel;
3. Gain clear understanding of, and document, the current price targets;
4. Develop simple analytical routines to establish the company's current ability to meet those targets – to include the analysis of expected versus actual price index by looking at the pre and post-market close figures – this will baseline the "as-is" position;
5. Configure the routines such that the analysis can be automatically repeated on a daily basis and the outcome stored for review.

ABOUT KSS FUELS

KSS Fuels is the leading global provider of pricing software, analytics and consulting services to fuel retailers and wholesalers in the oil & gas, convenience store, grocery and retail industries. Providing "Knowledge beyond the numbers," KSS Fuels helps fuel marketers and distributors implement effective pricing solutions and increase profitability through the use of knowledge and numbers. The company's US headquarters are located in Florham Park, New Jersey, and its international headquarters are based in Manchester, United Kingdom. For more information about KSS Fuels, please visit www.kssfuels.com.

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