

Rationalising Fuel Distribution Costs and Processes

Overview - The Fuel Distribution Function

While end user prices across both the USA and EU may vary the allowance for cost of distributing the 'last leg' to homes and filling stations, including marketing and advertising, dwarfs both the cost of raw material (crude), refining costs and tax, and is only 5 or 6 pence per litre.

When it comes to final phase fuel delivery to homes and petrol stations the only viable transport is, ironically, by gas guzzling road tanker. Some 40% of delivery cost is made up of vehicle costs, while approx 40% of vehicle costs is expended on fuel. So for every 10% rise in fuel costs an additional 1.6% is additionally added to the cost of fuel at the pump.

The US petroleum wholesale distribution industry includes about 5,700 companies with annual revenue of about \$750 billion, although the industry is concentrated and the 50 largest companies producing 70% of the revenue (Hoovers) many 'long reach' independents haul fuel under standards laid down by the refinery owners.

In the UK and Europe the distribution market is far more centralized. For example in the UK DCC GB Oils is the market leader with a 20% market share (750 tankers), with three others taking another large leading market share of over 40%. While most forecourt-dealerships may carry the brand of a major company, they are mostly independent businesses often using road transport companies including Wincanton, Hoyer, DHL, BP, TDG, Sucklings and Turners.

Service Convergence – Filling Station to Supermarket

A good sized filling station would provide some 5 million litres of fuel per year to members of the general public worth approx £7 mil. These distribution points have found that the margin on fuel is so slim that they must provide groceries, newspapers and snack bars to sustain their business models.

The local station with a simple canopy sheltering pumps and a small cash collection point has all but disappeared and in its place a 'one stop convenience store' has emerged. These are now usually owned by large chains serving motorists and families on the move, commuters rushing to and from work or busy shoppers.

Destination point supermarkets have harnessed their buying power to negotiate low fuel prices to entice customers, and gain a greater share of wallet. In the UK they have grown retail share from 19% in 1997 to around 40% in 2010 while the overall consumption has increased by only 1%. (source UKPIA). This dynamic has forced smaller units to close, forced out by price competition driven by unmatched economies of scale.

The fuel price cost breakdown varies from country to country. Broadly in the US the cost of fuel (at the pump) is 13% taxes, 69% cost of crude, 12% refining, and only 6% marketing and distribution costs (including retail distribution) source Chevron Corp. While in the UK the cost of taxes is approximately half of the at the pump price.

Prices of fuel are broadly aligned across Europe, which is far more expensive than the US as the green agenda is far stronger and deters the use of 'black fuel', while there is a higher propensity for governments to raise revenue. So the consumer is far more price fickle, particularly in these austere times, where just a single 1p difference can make the difference between winning and losing a customer.

The Home Fuel Market

The Home fuel market services LPG and heating oil demand in the UK, although in Europe some companies also supply biomass pellets. Fuel for home use does not incur the swinging tax regime applied to motorists, but similarly, margins are very tight.

As a result the UK industry has consolidated over the last 10 years as a plethora of marginal distributors have been absorbed leaving only a few major companies to dominate the market.

Home fuel distribution has become a marginal business, running on tight margins, servicing price sensitive consumers where relatively small changes in exchange rates, refinery costs and crude oil prices are quickly reflected in the retail price, and will encourage fuel saving and a switch to a greener source of power. Therefore every penny saved in distribution costs contributes to gaining a competitive price edge.

Regulations – Duty to Protect All Stakeholders

Fuel distributors not only have to comply with industry standard health and safety, greenhouse gas emission and driver hour legislation, but also with special environmental, emergency planning (particularly for COMAH sites) and storage regulations. These statutory regulations are reinforced with a host of internal procedures, which are to safeguard stakeholders and avoid costly fines by government inspectors.

Keeping Distribution Costs Under Control

<http://www.thepriceoffuel.com/howfuelisdelivered/>

Distribution costs will vary depending on a number of factors. The key distribution cost components are broadly:

- Transportation: 35%-45% of which fuel represents 40% of total transportation costs
- Inventory Carryover: 20-24%
- Storage: 18%-22%
- Customer Service and Back Office Administration – 10%

It is the reduction of vehicle costs, minimising the storage and inventory carryover costs, and tactics to gain new customers that is the focus of attention for business managers. Logistically distributors wish to avoid bad debts and storage costs, yet wish to buy at the best possible price in a dynamic wholesale fuel market.

Strategic Planning – Main Functions

Therefore at a regional (refinery or major depot) level, strategic planning models are focused on maximising throughput and holding minimal stock, therefore being able to assign correct volume shipments to appropriate distribution centres and identify the most appropriate depot for allocation is very important. This model is dynamic and will continually assess the most economic delivery options to optimise depot resourcing and transport availability.

Refineries are better able to plan their production runs and synchronise appropriate deliveries and transportation once future demand is accurately calculated. Aligned with demand planning is price planning and inventory planning, in order to ensure both BtoB and BtoC customers do not walk if supplies run out, but also to ensure revenues are maximized.

Management will be able to choose the appropriate fuel-mix formulas to align with depot requirement and seasonal variations, while balancing refining capacity, throughput and demand.

Accurate demand forecasting methods can drastically lower the cost of inventory and allow distributors to buy forward and trade in derivatives (hedging). Transportation can also be pre-booked at best prices and load consolidating can be pre-planned.

Long term transport planning will include the analysis of contractor costs against in house transport resources, the appropriate selection and management of the transport services, and identification of special equipment and operational requirements.

Local Domains

Depot management (on receipt of automated or anticipated tank readings from customers), will action orders taken by phone, internet, email or automated messaging directly from tank sensors. They will analyse and report the anticipated demand for various fuel products, and as accurately as possible, optimise the level of carryover stock yet minimise the required storage capacity via 'just in time' deliveries.

Site management will monitor usage planning and particularly monitor tank levels (observing appropriate tank maintenance and changeover processes). However the ability to execute a cost-effective and viable 'Just in Time' inventory plan, which ensures minimum stocks are available for delivery can be difficult, and thwarted by sudden changes in the weather, or significant and unexpected disruption to the supply chain.

Transport planning ensures that appropriate transport resources are available, and that schedules and deliveries (and collections) and driver rotas are appropriately prepared. Transport systems carry driver, vehicle and customer information so that safety standards, including driver hours, licences, operational checks and that driver, depot and site safety standards are observed.

Vehicle management systems receive all driver and routing instructions, including pre-delivery safety checks, and monitor all aspects of the vehicle's operation including driver behaviour, route, and load status. More advanced systems can also monitor meters and all operational equipment including valves and security, and will build all track and trace and routing services onto a single platform.

Safeguarding Stakeholders - ATEX Approval

Fuel distributors look to deploy ATEX approved devices that minimise the threat of igniting vapour fumes in potentially explosive environments. Only these systems provide a guaranteed safe environment particularly if hardware – such as proof of delivery signature capture devices etc.– need to be taken out of the cab.

New Generation Vehicle Management Systems

Up until now the array of requirements makes it necessary to currently provide several in-cab devices, (one set of equipment providing operational information while another delivering route mapping) as well as printers, often not all available from the same manufacturer an 'plumbed-in together' using various cables and interfaces, introducing complex operation, and increasing cost and likelihood of failure.

New generation VMS devices incorporate all in cab equipment into a single unit, navigated by an easy to use touch screen. Yet they maintain there highly ruggedized and ATEX conformant build quality.

Robust Build

In order to deliver business continuity such units are especially tooled to withstand extreme vibration and ultra harsh conditions.

Build quality and the continued working of key data interfaces is of great importance as, simply, the truck is off the road if the IT component fails. It is for this reason that suppliers should be able to reference proven low failure rates and provide 'easy fix and modular' service parts so that faulty units can be easily repaired within minutes by site maintenance engineers.

Units have to be especially engineered to support both GPS (Global Positioning Services) for truck positioning via satellite and GPRS (General Packet Radio Service) to facilitate internet access, as well as facilitating secure two way data and voice communication between back office, and depot control services.

Real time security alerts systems should also be built in, to highlight unauthorised use and to monitor the possibility of theft.

Importance of Real Time Visibility.

New generation units are essentially provide both a highly sophisticated middleware service and a front end information processor. The array of communication services will simultaneously monitor all vehicle activity, driver communication and operational data so that information provides a true real-time visibility of all distribution activity, driver behaviour, and vehicle performance. They provide the driver with an invaluable information aide, necessary to perform as a multi-disciplined professional by, not only, displaying route information, and site safety instructions, but also and alerting the driver to any malfunctions that may be affecting vehicle safety, operation or performance.

Cost Rationalisation – The Payoffs and Pitfalls

It is, of course, difficult to estimate efficiency gains, as these can vary case by case. However there are a number of proven technologies that often show almost immediate results such as vehicle management systems (typically 3%-10% fuel cost savings can be expected representing 1.5%-4% of total distribution costs).

Vehicle management systems do help expose poor driving and therefore can extend the lifetime of vehicles, and therefore lower the capital expenditure required to maintain and replace the fleet. Many fleets have extended vehicle lifecycles but up to a year by deploying such devices.

Resource planning systems often quoted savings via reductions in labour costs, although these can be difficult to realize in the short-run. Rather organisations allow natural wastage to occur, leavers jobs are not to be replaced, and re-training from back office to front office roles may be preferred to costly redundancy. Contactor costs are easier to reduce, as contractual penalties may be light or even non existent.

Cost savings from rationalisation of the distribution network by closing and resiting depots can yield high returns, however the planning process can be complex and depot re-location could incur large capital expenditure and a decline in service levels to some locations.

Part of the revenue optimization process demands that scheduled vehicles are available when required, and not subject to systems or mechanical failures. Potential failure of cabin IT systems pose one such risk and effectively make the vehicle inoperable.

Importance of Systems Integration

To obtain the maximum value and reduce overall operational costs, distributors continually review their operations and recommend process change, coupled with the implementation of appropriate information technology.

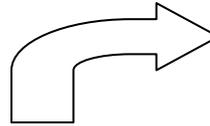
It is typical for disparate systems to have been built up over time and therefore new IT components have to pass and accept data to and from each other (in real time) in order to maximize supply chain efficiency, and optimize cost transparency and expose areas of operational and risk.

While extensive flow diagrams can be shown, the true benefits lie in the attainment of the strategic objectives of the regional, local, customer and field domains. We have therefore simplified the explanation to show strategic business imperatives, the base-line IT systems, and the data parameters that are exchanged in order to provide an end to end real-time visibility.

**Fuel Distribution
Business Imperatives**

**The Regional Planning
Domain**

- Project Overall Demand for Products
- Optimise Appropriate Resources and Stock Allocation to Meet Demand
 - Choose Best Cost Distribution Resource Allocation Options
- Implement Policy & Processes to Mitigate Business Disruption



IT Tools

- ERP Systems
- Inventory, Demand & Price Planning
- Transport Planning
- Compliance Monitoring

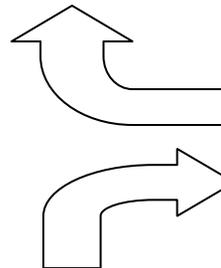
Demand Forecasts

Financial Reporting

Compliance Reporting

The Local Planning Domain

- Ensure Accuracy of Revenue and Cost Reporting
- Optimise 'Just in Time' Stock Planning
- Identify Areas of Potential Waste
 - Optimise Use of Resources
 - Safeguard Against Business Disruption



IT Tools

- ERP Systems
- Inventory, Control & Demand Forecasting
- Compliance Monitoring
- Accounting & Invoicing
- Cost Forecasting

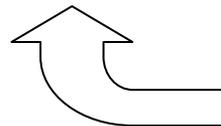
Revenue Position

Sales Demand (Trends)

Invoice Details

The Customer Service Domain

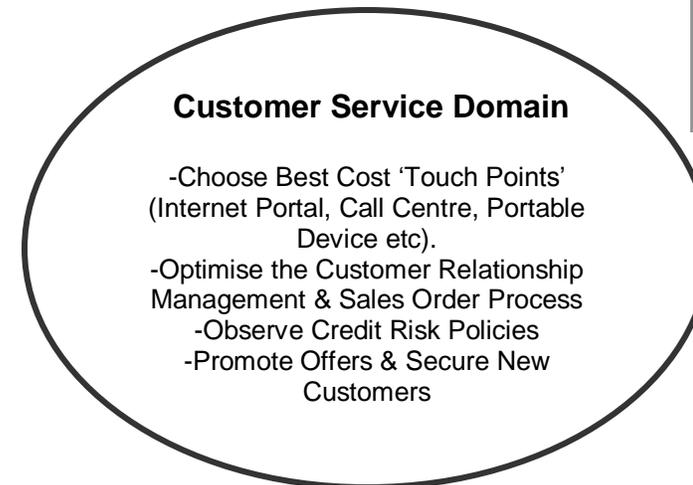
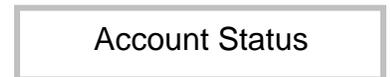
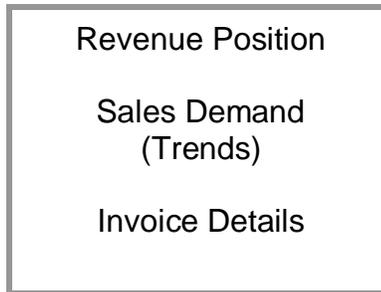
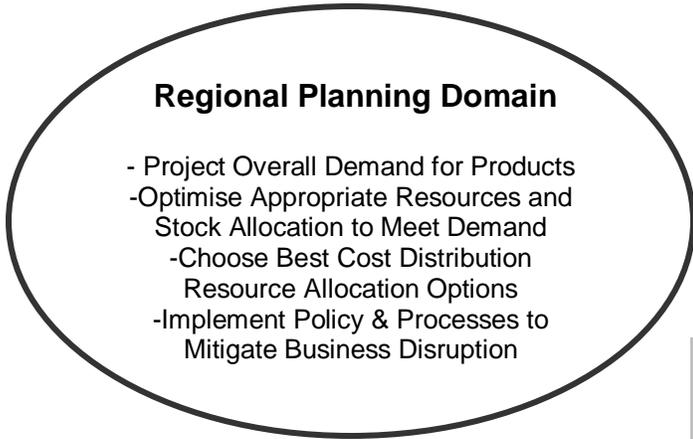
- Choose Best Cost 'Touch Points' (Internet Portal, Call Centre, Portable Device etc).
- Optimise the Customer Relationship Management & Sales Order Process
 - Observe Credit Risk Policies
 - Promote Offers & Secure New Customers

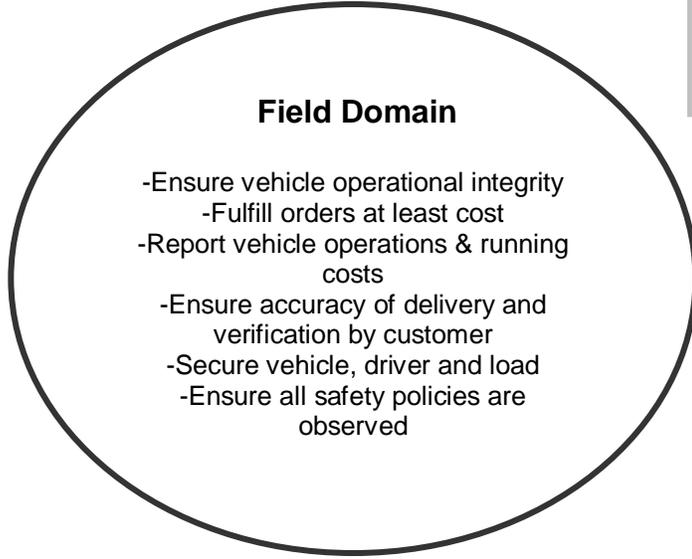
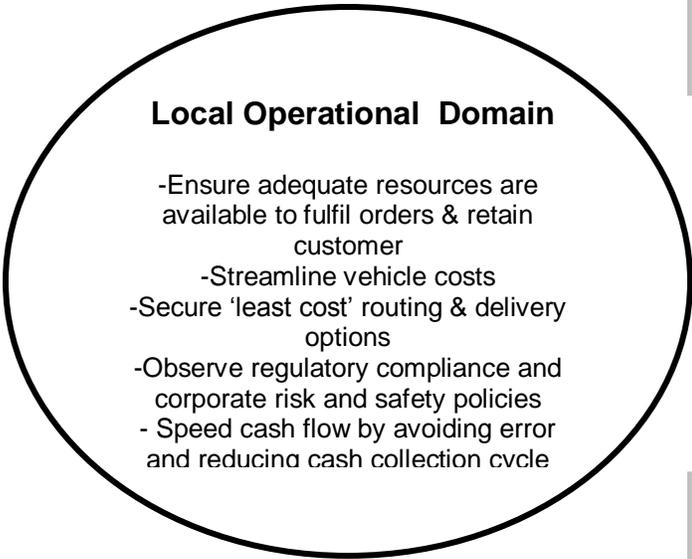


IT Tools

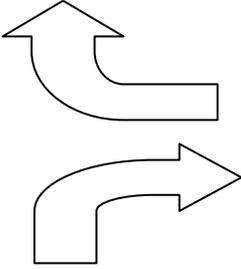
- Customer Relationship Management
- Sales Order Processing
- Web Portal

Fuel Distribution - Business Imperatives
Information Technology Tools and Data Integration Touch Points





Job Status
Vehicle Status



IT Tools
Scheduling
Vehicle Resource Management System



Job Completion Status
Invoicing Details
All Vehicle Operations
Security Status

Best Route
Late Orders
Site Safety
Vehicle Checks



IT Tools
Vehicle Resource Management System