

Absoft White Paper

Managing an efficient extended global supply chain

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Executive summary

Oil and gas companies need to manage and oversee their international supply chain activities in an effective manner in order to reduce costs as well as to enhance and guarantee efficient operations.

This white paper proposes five foundation elements which contribute towards running an efficient extended global supply chain for an upstream oil and gas company and discusses the key actions that should be put in place to support these:

- **Asset criticality**

To be effective the supply chain function must understand which goods and services are important to its internal customers – the maintenance, operations and projects departments. This understanding is based on a core asset register which is consistently reviewed to identify critical tags and equipments. Knowing what is critical to its customers helps supply chain to determine appropriate stocking, sourcing and management mechanisms.

- **Stocking strategy**

Whilst tag and equipment priority is a key input to determining stocking, sourcing and management strategies, current inventory data can also be a powerful information source for determining goods criticality. Data analysis techniques such as demand value analysis can formulate a view on which materials are critical and therefore which should be stocked where and with what stocking parameters.

- **Sourcing/ expediting strategy**

Based on inputs from the previous steps, the supply chain can identify which materials and material categories should be sourced through preferred global supplier relationships and also identify exceptions where local vendors would be used.

- **Returns strategy**

Historically the upstream supply chain function has prioritised the outbound processes of getting goods to its customers over managing the inbound processes. As offshore deck space runs out and the onshore surplus materials warehouse is bursting at the seams, organisations have begun to understand the need to manage returns processes more effectively using workbenches to facilitate tracking repairs, buybacks, rental off-hires, scrapping and similar scenarios.

- **Integrated enterprise resource planning (ERP) systems strategy**

An integrated ERP system is the glue which brings together the other four elements previously covered in this paper, combining data from projects, maintenance, inventory management, purchasing, logistics and finance. Specialist analytics solutions, which provide a holistic, cross functional view of the information in an ERP system, can help you to drive towards a healthy, robust extended supply chain and ensure that it remains that way.

The secret to implementing an efficient extended global supply chain is not to be daunted by the task. The organisations which have made the greatest strides tend to be those who collaborate with their customers and suppliers and take an integrated view of the program of work involved in implementing improvements in its extended supply chain across purchasing, inventory and logistics.

Introduction

The challenges of managing an efficient extended global supply chain

It is increasingly important for oil and gas companies to manage and oversee their international supply chain activities in an effective manner in order to reduce costs as well as to enhance and guarantee efficient operations.

As companies continue to expand globally and operate in ever more remote locations the challenges of managing this extended supply chain become increasingly onerous; companies must cope with the complexities of operating in both local and regional hubs, managing multiple languages and currencies, with different legislative and taxation requirements and often very different operating environments.

The supply chain manager is faced with some key questions:

- Which materials should I hold where?
- How do I achieve the right stocking policy and the correct level of inventory holdings?
- What strategic relationships do I need to form with my international and local service providers and vendors?
- How do I accurately track returns from offshore locations?

And ultimately;

- How do I achieve transparency in the extended supply chain and provide the right information to the right people to support them in making good decisions?

There are five key foundation elements which contribute towards running an efficient extended global supply chain for an upstream oil and gas company – with important actions and disciplines to be put in place to support each of these:

- Asset criticality
- Stocking strategy
- Sourcing/ expediting strategy
- Returns strategy
- Integrated enterprise resource planning (ERP) systems
- Strategy

This white paper will examine each area in turn and suggest key actions that can be implemented to introduce improvements and ensure that an oil and gas company can prioritise, manage and expedite equipment and materials across the globe in a timely manner.

The 5 pillars of an efficient extended global supply chain

1. Asset criticality

Supply chain is a service function and in order to be effective it must have some means to understand which goods and services are important to its customers. The supply chain function cannot make that criticality call on its own – it needs input from its customers. These customers – in the form of the maintenance and operations, and projects departments – are responsible for identifying the high impact equipments and systems in the asset register which are safety critical, production critical, time critical and so on. An on-going asset register criticality assessment provides key inputs to supply chain in its quest to establish appropriate stocking, sourcing and management mechanisms for the goods and services involved in asset operations.

As an example, take a fire pump on a remote offshore site. The maintenance and operations department flag the equipment as 'critical' because of its significance for safety. The flagging of the fire pump as critical will in turn invoke rules determining acceptable downtime and the priority of related maintenance work on that equipment, e.g. 'work until fixed'. The implication of these rules is that any materials related to the maintenance or repair of the fire pump must a) be held offshore, (time spent shipping the materials from a local or regional warehouse will break the allowable downtime rules) and b) should be included in the most rigorous inventory management regime available (stock counting, replenishment parameters). Likewise for specialist third party services, if downtime or degradation may invoke a requirement for specialist vendor support then on call arrangements should be in place to respect the criticality designation.

2. Stocking strategy

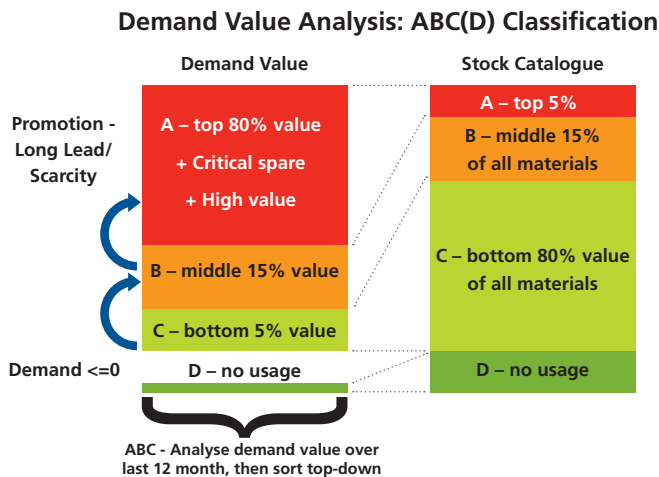
In the previous section, I described how the maintenance and projects disciplines can – and must – influence material criticality designations. There are also proactive measures which the supply chain function can undertake for itself based on current inventory data to help it to formulate a view on which materials are critical and therefore which should be stocked where and with what stocking parameters. This brings us to the second foundation element – stocking strategy.

Data analysis techniques such as demand value analysis (based on multiplying the number of issues from stock for an item multiplied by the unit price of that material for a given period of time) can produce illuminating results. A not atypical outcome is that you find that 5-10% of your stock materials catalogue accounts for 80% of the aggregate demand value across the inventory for a location!

Such analysis is a key input to a supply chain based equivalent of the asset criticality assessment described in the previous section. Items which move a lot, or are valuable, or both will be critical goods. At the other end of the spectrum, items which do not move or are low value or meet both criteria will be least critical. Typically, this criticality assessment is played out in the inventory management system in the form of an ABCD classification, with the A-D designation of a material reflecting the effort and rigour that is applied to the management of that material at a location.

For example, for items associated with classification A (critical), a stock count may be performed four times a year, while replenishment parameters may be reviewed once a year. Items designated as C might be counted once a year, and their replenishment parameters reviewed every two years and some items may be considered for movement from offshore to a local warehouse or from the local warehouse to the regional warehouse.

One very important caution with regard to the exercise described above is to stress that maintenance and operations, and projects, must be involved in this exercise in order to highlight exceptions where inventory data may not tell the whole story, e.g. irrespective of whether a material was issued in a year, if an item is a critical spare or an item required to maintain a critical equipment – it should be classified as A.



3. Sourcing/ expediting strategy

Sourcing strategies in the context of extended global supply chains deserve an article on their own. The complexities of doing business in Brazil, West Africa and the other oil and gas provinces are well documented and the challenges involved in local procurement, inventory management and logistics in these locales are seldom overstated.

That being said, there are some basic principles that apply irrespective of location and which tie into the previous two sections of this article. These basic principles relate to the third foundation element of an efficient extended supply chain– sourcing/expediting strategy.

Having defined the criticality of goods and the related inventory parameters (note – non-stock is a valid inventory designation for a material), you have also defined what goods need to be procured and held where. This information can help you to identify the global suppliers who can cover your needs for specific categories of materials and services at regional, local and remote site levels and highlight situations where you will have to make exceptions and source to specific local vendors.

Critical goods and services should be established on formal sourcing constructs – contracts, framework agreements or blanket orders and should be supported by service level agreements (SLAs) that relate to delivery performance that respects material criticality.

Expediting strategy should be driven by the same thinking. Not all delivery due dates are equally important. By definition, delivery due dates related to items supporting critical activities tend to be more important than those for rope, soap and dope.

It is recommended that expediting is executed within the context of the priority of the activity that requested the goods or services. Traffic light reporting of red (late), amber (at risk) and green (on track) should be available and these analytics must highlight priority 1, 2 and 3 – and promote expediting priority 1 activities first.

4. Returns strategy

Unsurprisingly, the oil and gas supply chain function places great emphasis on getting the right goods and services, to the right place, at the right time. This outbound orientation ensures that goods and services are available at the remote site to perform work, however, in recent years there has been a growing recognition that inbound material returns is also a very important area of the supply chain to manage.

The war stories will be familiar to most supply chain professionals: growing stock holdings, no deck storage space at remote sites, surplus materials not being reused, no visibility or management of company materials held at third party sites, scrapping of usable items, the list goes on. This brings us to the fourth of our foundation elements – managing returns.

Often subsumed under an overarching investment recovery policy, the processes and procedures which ensure that goods returns are handled efficiently require the definition of a) the scenarios that returns processes must cover (repairs, rentals return, return for reintegration into stock, scrapping, return to vendor, return for holding etc.); and b) the steps that comprise each of those scenarios and who is accountable for each step.

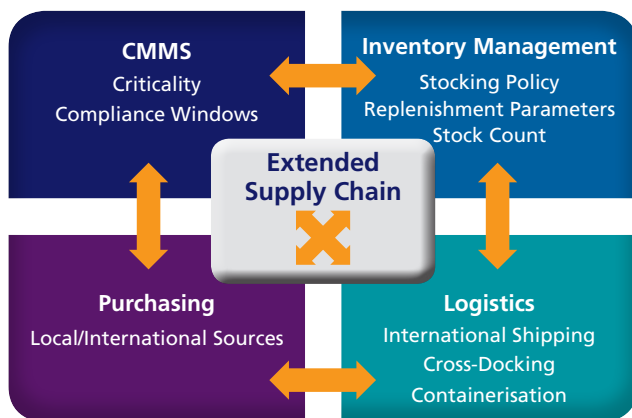
A major facilitator for effective execution of returns processes is a returns workbench. Such a workbench tracks and reports each material return by its related returns scenario and for each step of the scenario. This supports multiple departments/ functions in identifying and executing their specific steps in the returns process and also provides visibility of where blockages and delays are occurring.

For example, the finance department will use such a workbench to search for materials which are at the stage of a scrapping scenario where financial approval is required. The warehouse manager may use the same workbench to identify and deal with returns which have materials awaiting approval for reintegration into operational stock. Without such a workbench, tracking and progressing returns scenarios which typically involve multiple steps and multiple departments can become a nightmare.

5. Integrated ERP systems strategy

Technology is a key enabler in the quest to achieve efficiency in the extended supply chain but traditional systems struggle to cope with the complexities of the modern oil and gas industry. Companies often suffer from a lack of integration between purchasing, logistics, inventory management and maintenance systems, with key information being held in separate systems or offline in spreadsheets at various global locations.

Real world view of integrated systems



This article has presented four distinct elements that are key to running an efficient extended supply chain. Whilst the elements are distinct, for each individual element to operate successfully it relies on integrated sets of data from projects, maintenance, inventory management, purchasing, logistics and finance – which leads us to the glue that brings that data together and the fifth element of our extended supply chain – an integrated ERP system.

Modern ERP systems such as SAP offer integrated datasets across the Computerised Maintenance Management module, the Capital Projects module, the Finance module and the Supply Chain module. These integrated datasets represent an excellent platform on which to base an efficient extended supply chain.

Potential is a key word in the previous section. Many organisations run an ERP system but still struggle to realise the benefits of the integrated data and likewise struggle to implement and maintain the key elements of the extended supply chain described in this article. Why should that be?

Much of the answer to that question lies in the realm of integrated reporting and analytics. The standard reporting in ERP systems tends to operate in the silos of sub-modules. There is strong purchasing reporting functionality in the procurement sub-module or strong asset register reporting functionality in the maintenance module – but if you try to find reporting which spans modules and for example promotes PO expediting within the context of maintenance order priority or asset criticality – you will struggle.

The response from the likes of SAP and other ERP vendors will be to point you towards their specialist analytics offerings such as SAP® BusinessObjects™. Such tools support flexible interrogation of data across functional boundaries and allow you to relate your maintenance data with your inventory data and your procurement data to produce reporting that surfaces the gaps and improvement opportunities that lie between your current state and the future – an efficient, effective extended supply chain.

Conclusion

In conclusion, if an organisation has in place the foundation elements nominated in this article they will almost certainly be a long way down the road towards running an efficient and effective extended global supply chain.

In reality, if they were asked to rate where they were with regards to maturity and effectiveness against some or all of these foundation elements, many upstream organisations would admit to being a work in progress.

The journey can appear daunting if regarded as incremental individual work packages but the experience of the author is that the organisations which are furthest along the road are those that have done two things.

The first is to take a bigger picture, integrated view of the work. Rather than establishing individual siloed projects for asset criticality (within maintenance), stocking strategy (driven by warehousing), sourcing and expediting (procurement led) and so on, the organisation has established a program which integrates the efforts of each of these workstreams to ensure that the individual solutions work, work well, work well together and are in the best interests overall of the supply chain and its customers.

The second key action is to institute a REPORT -> IMPROVE -> REPORT continuous feedback loop process for the program of work supported by key analytics and reporting. Reporting that provides transparency around key questions such as:

- How many equipments/ tags have/ have not been reviewed for criticality?
- How many critical equipments have/ do not have a spare parts list?
- How many critical spares have/ do not have replenishment parameters?
- How many critical spares are established on fixed source contracts?

is crucial to establishing realistic planning and resourcing of the critical tasks that are core to the delivery of the foundation elements.

Establishing an integrated program of work to implement the foundation elements with a supporting integrated set of analytics is a hugely important step that organisations can take towards achieving their goal of an efficient, effective global supply chain.

About Absoft

Absoft is the leading provider of SAP solutions and services to the upstream oil and gas industry in the UK and Norway.

We have been delivering SAP solutions tailored to the needs of the sector since 1991 and have carried out implementations in over 40 countries, Absoft has unrivalled knowledge of global upstream oil and gas business processes.

We provide a comprehensive range of SAP services and advice, including consultancy, implementations, process improvement projects, system hosting and management, training, and support both onsite and through Absoft's UK based SAP helpdesk.

Absoft is also a SAP BusinessObjects Partner providing powerful Business Intelligence tools which bring together information from across the business for reporting, query and analysis with the aid of user friendly dashboards and visualisation tools. These give users of all levels – from the high end analyst to the casual business user access to the information they need, when they need it.

We are proud of our track record in customer service excellence and our belief in delivering business solutions of enduring value – our first customer has remained our customer since 1991.

From our offices in Aberdeen, London and Stavanger we currently service upstream oil and gas customers of all types and sizes from major operators and integrated oilfield service companies through to independents.

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