KPMG

Rethinking the upstream supply chain

KPMG's global oil and gas practice was named a Leader in oil and gas professional services in the IDC MarketScape: Worldwide Oil and Gas Professional Services 2016 Vendor Assessment (August 2016).

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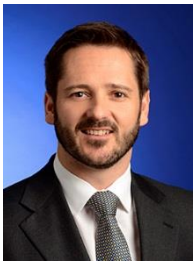
KPMG Global Energy Institute

Foreword

KPMG firms work with almost 70 percent of the 125 oil and gas companies listed on the Forbes 2000, and was rated by Kennedy Consulting Research & Advisory/ALM Intelligence as a 2016 Vanguard Leader in Procurement Operations, and by Gartner as a global leader in supply chain strategy and operations consulting in 2016.

This paper aims to provide valuable insights into the global trends impacting the Supply Chain and Procurement functions of the upstream oil and gas sector, and looks at ways to position yourself to take advantage of potential future initiatives.



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> 2016 is a make-or-break year for the energy sector when it comes to supply chains. Given the market development for oil and gas companies, there is little to no leeway for operational inefficiencies, which could be tolerated before. Invisibility of inventories and … decentralized control systems need to be eradicated."

Energy sector President
Leading logistics company,
February 2016

Rethinking the upstream supply chain

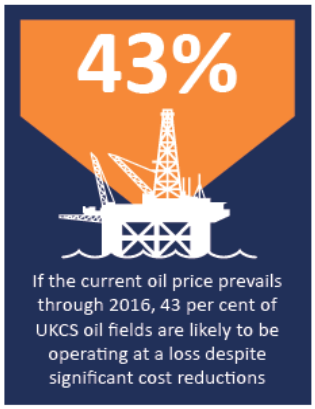
Operating costs may be decreasing, however continued cost rigor and further future efficiencies will still be required as the oil price continues at lower for longer. Businesses that want to compete and capture future value, need to invest for tomorrow and transform into demand-driven, flexible and agile organizations.

Supply Chain and Procurement functions across the industry are under close scrutiny by senior management, who are looking for large savings and swift cash release.

Many operators have focused on consolidating spend, reducing inventory, and wherever possible integrating teams to free up resources.

Simply reducing headcount and tweaking current processes is unlikely to be enough to prevent a repeat of past mistakes.

To come out of the low oil cycle in a strong, competitive position and make hard-won efficiencies stick, fundamental changes are required. Changes to the way companies operate. Changes to how they manage demand.



Source: Oil & Gas UK, Activity report 2016

In 2014, many had foreseen oil prices re-balancing. But few believed they would drop so quickly and so low. Oversupply, continues to be a challenge for the oil and gas market and is likely to also become a significant feature of the gas sector in coming years as more liquefied natural gas (LNG) programs come online[2].

In a bid to protect shareholder dividends, companies re-negotiated supplier contracts across the industry in recent years. Globally, vendor and contractor rates fell by an average of 20-30 percent[3].

Operators and oil field service (OFS) companies during 2016, continue to examine their cost bases and supporting headcount. Although Supply Chain and Procurement have long been an obvious target, the root cause of supply chain inefficiencies often lies with processes and engineering behavior outside of the immediate influence of this function.

Surplus and inefficiencies within the company can easily creep back. To avoid this happening, you need a root and branch review of processes and technology, including a rethink of how engineers' performance is measured, to change behavior. Many different initiatives are being driven by, or proposed to, oil and gas companies. The trick will be to make the right choice, at the right time, to capture future value.

Technological advances and other disruptive forces have been shaking up the energy industry for some time, KPMG believes disruptive technologies such as cloud computing, data and analytics will likely drive business transformation over the next three years.

Change in annual earnings from 2015[1]:

BP	Woodside	Shell	Chevron	ExxonMobil	TOTAL
- 163%	- 99%	- 80%	- 76%	- 51%	- 18%

Source: 1 Company results 2015 (CCS earnings/Replacement cost profit)
2 Douglas-westwood.com/dw-monday-twin-peaks
3 *Oil producers retool for lower prices*, Financial Times, 1 February 2016.

6 Elements to capturing future value

Many different initiatives are being driven by, or proposed to oil and gas companies. The trick will be to make the right choice, at the right time, to capture future value.

1. Releasing cash and reducing SKU complexity

Materials management offers some great opportunities for improving working capital and saving costs. A recent client example identified US$1.9 billion of upstream inventory, where US$1.2 billion had no forecast demand usage, two-thirds had not moved in over a year, and a fifth not moved in over 5 years. Cross- functional teams should be able to swiftly identify any surpluses and adapt inventory levels more closely to actual demand. But this won't be enough to make companies sufficiently agile and flexible to respond to ever-changing demand patterns.

A persistently delayed and distorted view of end customer demands can lead to inefficient capacity utilization, poor material or product availability, and high stock levels.

In the North Sea, an Efficiency Task Force (ETF) operator group has been set up to drive a pan-industry improvement in efficiency including inventory.

Operators Apache North Sea, Centrica, EnQuest, Shell Upstream International and Talisman Sinopec Energy UK Limited have come together to trade their sizeable material inventories[4] in the hope of reducing the cost associated with the storage and maintenance of materials on an online trading platform. The aim is that by allowing access to a greater 'virtual' pool of materials, companies can reduce individual stock holdings and cut lead times for access to vital equipment.

It is KPMG's point of view that further use of technology, engineer access to a digital interface, and greater connectivity with the supplier network will allow operators in the future to improve agility and manage the bullwhip effect. Other industries such as Retail and Manufacturing have been quick to adapt however the opportunity for the upstream sector could be enormous.

2. Improving contract performance

A recent international KPMG study suggests that only 18 percent of negotiated value is realized throughout the contract lifecycle[5]. This presents a significant opportunity to manage contracts more effectively.

Re-pricing negotiations can be tough work. So it's essential to reinvest any short-term gains into sustainable transformation of the Procurement function.

> "There is no longer one future on the horizon" — at least not from a current vantage point.*
>
> **Future-proof procurement**, KPMG 2016

Organizations with leading Procurement practices recognize the need for integrated processes and technologies that manage performance, risk and value; putting Procurement at the heart of decision-making.

An example where an approach to contract performance has been re-thought, Diamond Offshore has announced an industry first-of-its-kind contractual service agreement (CSA) that transfers full accountability for BOP performance to GE Oil & Gas, the OEM.[6] Under the agreement, Diamond sold 4 subsea blowout preventer (BOP) systems back to the OEM GE for $210 million. In return, Diamond has leased back the BOPs under a performance-based contract tied to total hours of pressure control provided. This 10-year collaborative arrangement showcases a new way of thinking to drive continuous improvement.

3. Utilizing procurement technology

The procurement process is currently undergoing increasing and continuous standardization and automation. Manual procurement processes, lengthy management approvals, reconciliations, and payment cycles, and a general lack of integration with other business processes and systems can create inefficiencies and high transaction costs.

Equally important, a lack of management visibility into these processes can inhibit effective supplier management, weaken spending controls, and limit the benefits of strategic sourcing.

Utilizing procurement technology can help organizations to increase procurement effectiveness and drive business value to the bottom line.

Simultaneously, the development of artificial intelligence is making such rapid progress, that algorithms will soon be able to take over a growing number of procurement tasks.

While intelligent procurement systems identify anomalies and patterns in data and processes, the procurement professional will use these to initiate targeted measures such as ad hoc supplier audits or product quality tests before an incident occurs.

Source: 4 http://oilandgasuk.co.uk/companies-collaborate-to-reduce-warehouse-stock-and-improve-access-to-vital equipment-as-efficiency-task-force-trial-project-ramps-up/

5 KPMG oil price volatility – 2015 response series — Taking the cost out of third party spend, http://kpmg.co.uk/creategraphics/2015/03_2015/CRT036520/150313_Cost_transformation.pdf

6 investor.diamondoffshore.com/phoenix.zhtml?c=78110&p=irol-newsArticle&ID=2136291

Many different initiatives are being driven by, or proposed to oil and gas companies. The trick will be to make the right choice, at the right time, to capture future value.

4. An adaptive network distribution strategy

Logistics can account for between 5–15 percent of the operating costs of a typical oil and gas facility[7], so every improvement can make a significant difference to the bottom line.

The use of control towers and 4th party logistics (4PLs) providers is rapidly gaining popularity in industries like chemicals and consumer goods. A central control tower or hub, with appropriate technology, organization, and processes, captures and uses supply chain data. With enhanced visibility, executives can make more reliable short- and long-term decisions.

Tightly coordinated control towers, along with integrated business planning (IBP), collapses the historical divide between planning and execution. The result? A smoother path enabling logistics professionals to spot an issue and react to it quickly and decisively.

There are few supply chains more challenging than those in the oil and gas sector. But with increased use of integrated, digital technologies, companies can gain greater efficiencies throughout their entire upstream supply chain.

Shell Upstream has already adopted a 4PL approach and seen a reduction in logistics costs of up to 25 percent, thanks to improved asset utilization and integrated supply chain planning.[8]

In other industries, companies are centralizing their international transport decisions, to manage the complexity that comes with globalization. Unilever has been an early adopter of 4PL, beginning the journey in 2007, developing a control tower using an 'in-house' 4PL. This resulted in significant savings including an 8 percent reduction in transport costs; 3 percent load fill improvement; and total vehicle kilometers traveled reduced by 1.7 percent.[9]

5. A demand-driven supply chain

Oil and gas supply chains have historically been complex due to wide geographic footprint, diversity of manufacturing, and ever-changing demand profiles.

Today's Supply Chain executives want real-time visibility across all tiers in the chain, to better match supply with actual demand, reducing supply disruptions and avoiding unnecessary capital expenses.

Demand-driven supply chains align planning, procurement, and replenishment processes to actual consumption and demand, to reduce operating expenses and improve working capital.

Companies are applying next-generation supply chain technologies and cloud solutions. These give new levels of transparency to help balance supply and demand.

All business units, divisions and collaborating parties can access a shared platform, enabling information to be synchronized across partner tiers. Thanks to such advances, it's possible to gain a real-time view of total demand, supply, and capacity.

Key characteristics

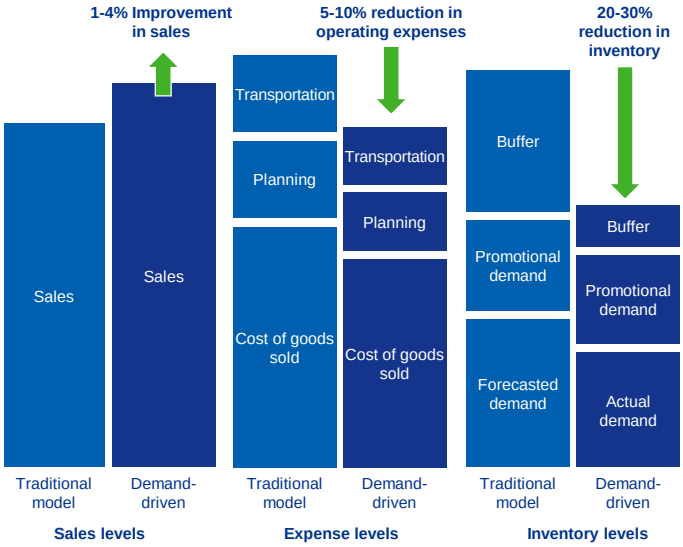
- product movements driven by actual demand/consumption
- real-time demand/supply visibility across partner tiers
- inventory managed to dynamic target operating levels
- early identification of demand/supply continuity issues
- single demand signal shared across partner tiers: one version of the truth
- cross-functional team with scenario modeling capabilities

The demand-driven supply chain is not a new concept. Yet Gartner, who first coined the phrase, found that fewer than 10 percent of companies consider their own supply chains to be fully integrated with other parts of the business[10].

Source: 7 KPMG analysis
8 Shell: First-in-Industry 4PL logistics solution
9 www.gs1.org/sites/default/files/docs/gsmp/05_unilever_transportation_gs1_warsaw_conference_presentation_12102015.pdf
10 *Demand-Driven Supply Chain 2.0*, KPMG International 2016

> ….the oil industry can have a tendency to try to do too many things at once, but doesn't focus on any of them enough to achieve a big change."
>
> **Colette Cohen,**
> Former Senior Vice President (SVP), UK and Netherlands, Centrica, May 2016[11]

What difference could a demand-driven supply chain make to your business?[12]



6. Harnessing cognitive technology

Cognitive technology's massive, unstructured data and innovative learning capabilities offer exciting potential, expanding the way we look at and manage the supply chain.

By enabling greater collaboration between humans and systems, cognitive technology lets companies communicate and analyze large amounts of unstructured data. This provides valuable insights faster, and lets supply chain professionals automatically sense changes in demand/supply and respond accordingly.

Cognitive capabilities have already been trialed with organizations like Woodside, Shell and Baker Hughes to reduce operational costs[13].

Woodside introduced predictive analytics systems to its entire LNG portfolio, following a successful predictive maintenance pilot at its Pluto LNG Plant[14]. Baker Hughes, the oil services group, is also trialing a 'virtual assistant' known as Amelia, which will answer invoice and payment queries from the company's thousands of vendors via instant messenger[15].

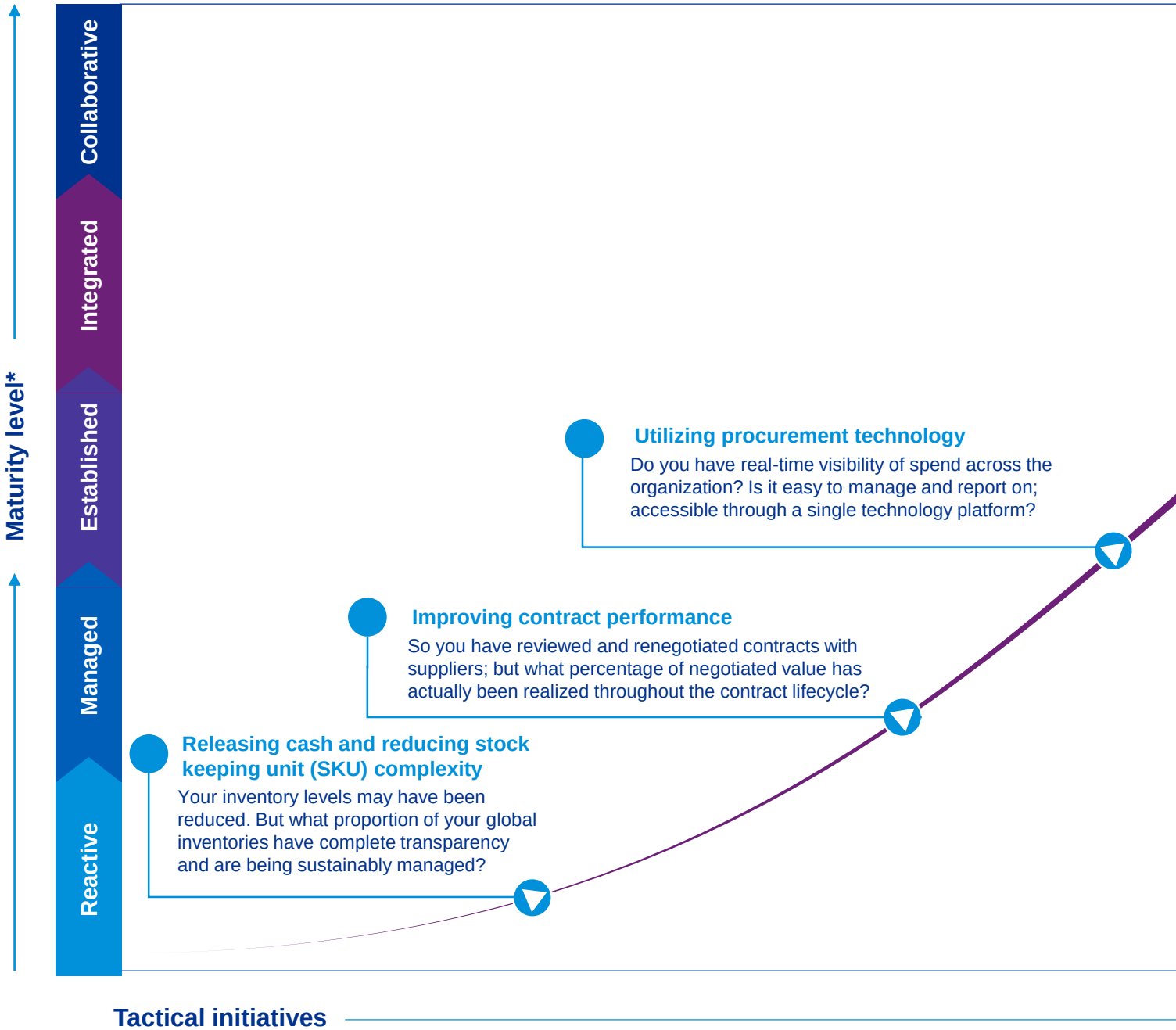
This ability to quickly respond to questions has potential across the entire supply chain. Through instantaneous review of machine manuals, company policies and maintenance records for each piece of equipment, technicians could gain the information they need prior to reviewing replenishment levels.

The use of advanced automation technologies is still relatively immature. But there could be significant opportunities within supply chains, either by operators, or by working collaboratively with suppliers.

Source: 11 ITF Aberdeen oil and gas Technology Showcase
12 *Demand-Driven Supply Chain 2.0*, KPMG International 2016
13 www.ogj.com/webcasts/2015/07/predictive-analytics-in-your-digital-oilfield.html
14 www.lngindustry.com/liquefaction/22092015/Woodside-and-Accenture-team-up-1334
15 *Baker Hughes and Shell to trial artificial intelligence software*, Financial Times, 4 December 2014.

Take your organization from Reactive to Collaborative

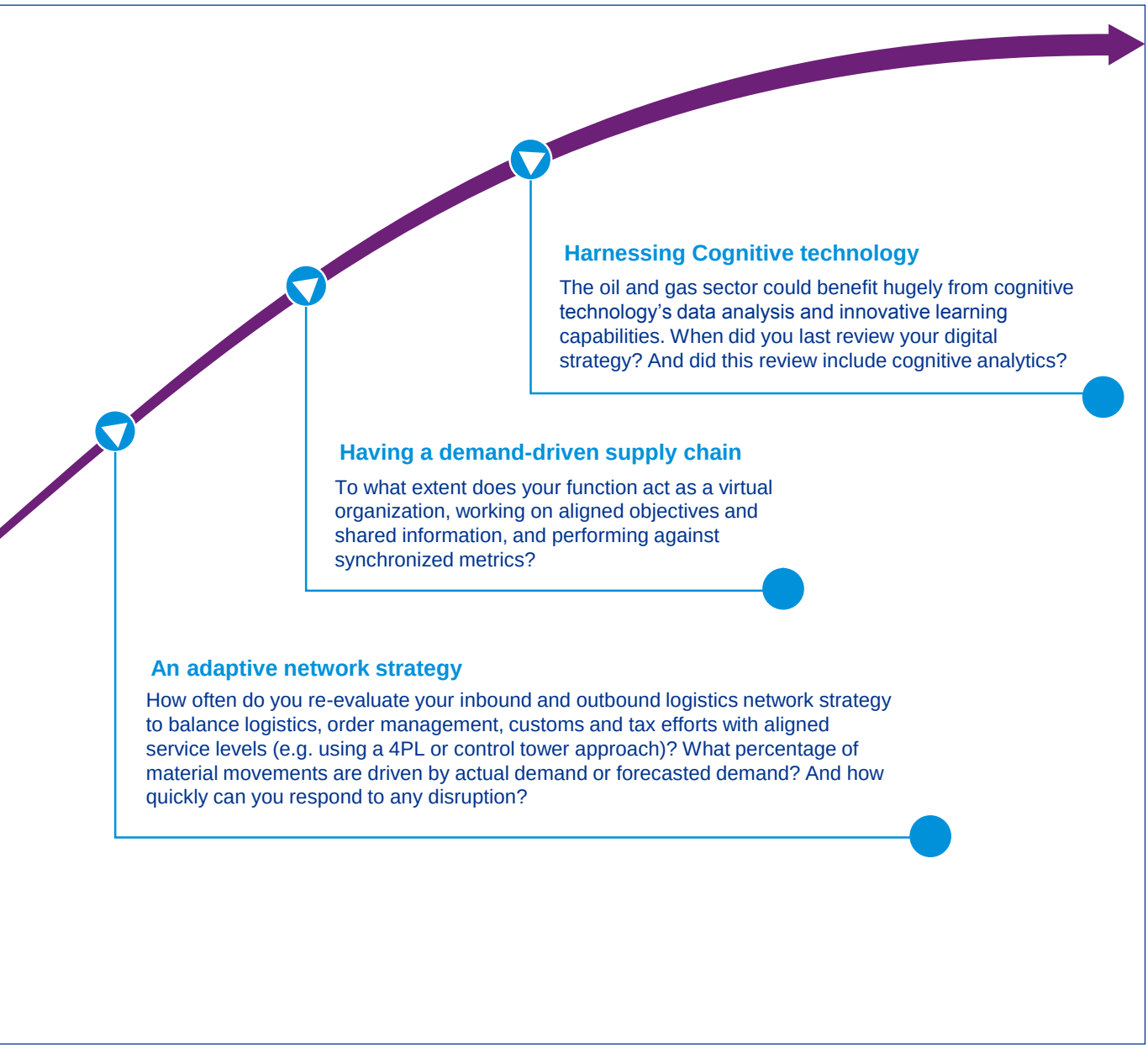
Organizations at all levels of maturity, from Reactive to Collaborative, should establish initiatives in areas such as contract performance and procurement technologies to drive sustainable efficiency improvements.



Source: 16 Rethinking the upstream supply chain, KPMG International.

***Maturity levels as defined by KPMG's proprietary Supply Chain Maturity Assessment (SCMA), which assesses an organisation's end to end supply chain operations to identify capability levels and gaps compared to leading practices.**

While cost reduction remains a critical component, in more mature Oil and Gas Supply Chain organizations there should also be a focus on more strategic, innovative and proactive initiatives such as control towers and cognitive analytics.



Enablers to a stronger supply chain

Get your business focused on value

The Supply Chain and Procurement functions can only deliver their full value when the entire organization is focused on the same goal.

This is as much about philosophy as it is about process, and is likely to involve a wider cultural change.

By regularly questioning and discussing overall strategic objectives, and what drives value (margin, specification, availability, etc.), companies can foster a culture of continuous improvement and harmony.

Only when you've aligned and measured all organizational goals can you begin to make sustainable improvements.

Improve visibility of data

Cloud-based software, increasingly via mobile devices, can accelerate the speed of data transfer across the supply chain. All customer-facing functions and partners can link transactions to inventory reports (updating systems in minutes). Ultimately you should have visibility all the way back to the manufacturer.

Utilize the power of data and analytics

Analytics can dramatically improve forecasting, anticipate disruptions and manage inventory levels. But these benefits, along with initiatives like improved materials management or control towers, can only be achieved with accurate and visible data; something that many organizations need to urgently address.

Invest for success

Through analysis and one-to-one research, find out exactly what matters to upstream supply chain customers - whether they're offshore engineers or further down the value chain.

Although the application of cognitive technologies into supply chain and procurement is still relatively immature, the opportunities are clear. The key will be to evaluate initiatives that deliver sustainable benefits.

Early adapters should be able to shape the outcome for their future supply chains and capture future value.

> "I think you will see a much more stable and balance-sheet focused industry emerge from the ashes, but it's going to be really, really ugly to get through this valley."[17]
>
> **Mark Papa**
> Former Chief Executive Officer, EOG Resources

Source: 17 IHS CERAweek 2015 in Houston, http://uk.reuters.com/article/uk-ceraweek-oil-idUKKCN0VX0FY.

How can KPMG help you?

Our teams can work with you across a broad spectrum of services to sustainably help improve or maintain your market position.

Cross-functional benefits

KPMG member firms serves almost **70 percent of the 125 oil and gas companies** listed on the Forbes 2000, May 2015/16. Our Operations capabilities are enriched with Finance, Risk, and Tax know how.

Access to insight

KPMG's Operations Center of Excellence acts as a hub of knowledge, thought leadership, and insight for our supply chain and procurement consultants and clients around the world.

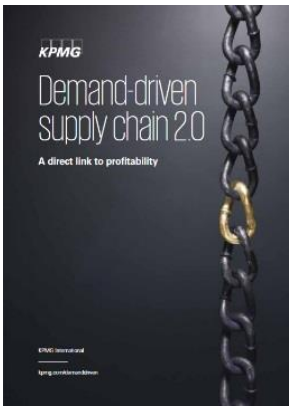
Get things done fast

You can realize value faster, by working with consultants who have hands-on industry and project experience.

Make it stick

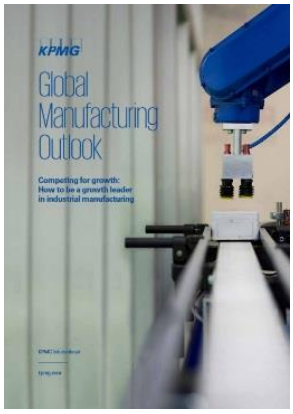
Our global network of member firms has more than **1,100 Operations consultants.** Wherever you are in the world, we can mobilize our extensive resources to help you transform your business.

Recent KPMG Thought Leadership



Demand-driven supply chain 2.0

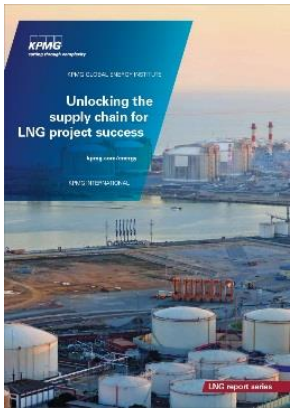
Future-proof procurement



Global manufacturing outlook 2016

2016 Global Consumer Executive Top of Mind Survey

Reaction — 19th edition



Unlocking the supply chain for LNG project success

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