Energy Perspectives™

Five Essentials for Improving Operating Costs

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Oil and gas companies must abandon traditional cost-cutting responses to adverse market conditions and work collaboratively with suppliers to manage costs and protect margins. Accenture Strategy believes that, by following five courses of action, the industry can drastically improve its cost-management practices and, by extension, operational sustainability. Companies that fail to adapt to changing market circumstances, meanwhile, risk destroying value and becoming uncompetitive.

Development and production costs have more than doubled in the past 10 years and managing resources efficiently has become an ever-greater priority—especially since oil prices are likely to remain depressed for the foreseeable future. Traditionally, companies have responded to low oil prices, high costs and weak margins by cancelling or postponing projects, laying off staff and freezing spending. But, reactive short-term actions such as these, risk destroying value. Facilities maintenance, for example, often falls victim to short-term cost reductions. While slashing maintenance budgets might deliver savings in the short term, postponing maintenance will eventually undermine longer-term asset integrity, and give rise to reliability and HSE issues. In fact, many of the E&P industry’s major accidents have occurred during periods characterized by extreme cost-cutting measures.

Accenture Strategy believes that cost management should not be viewed as a one-time initiative to be undertaken in reaction to adverse economic conditions. Indeed, transformational changes to the existing approach to cost management have become essential: the industry must change how it identifies the causes of inefficiencies and manages costs, and must learn to do more with less.

Accenture Strategy proposes five actions to manage costs effectively and deliver sustainable business improvements:

1. Think margin, not just production;
2. Scrutinize costs, and focus on controlling their drivers;
3. Concentrate on improving baseline production;
4. Share risks and rewards with suppliers;
5. Change culture: place greater emphasis on planning, accountability and service quality.

Figure 1: Cost management versus cost cutting

<table>
<thead>
<tr>
<th>Cost savings</th>
<th>40%</th>
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<tr>
<td>30%</td>
<td></td>
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<tr>
<td>20%</td>
<td></td>
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<td>10%</td>
<td></td>
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<tr>
<td>0%</td>
<td></td>
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<td>-10%</td>
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Performance monitoring and analytics to sustain cost reduction

Prioritized deployment of cost reduction initiatives

Cost-only focus driving negative production impacts

Consequential budget cut decisions cause new cost increases

Ad-hoc supplier negotiation

Initial setup investment and deep assessment

5-10% with cost cutting

30 percent with cost management

6 12 18

Time to impact (months)

Source: Accenture Strategy, Energy analysis
Increasing production is pointless if the incremental output is unprofitable.

In our experience, operators do not always have a good grasp of the cost of incremental production. Achieving maximum production from an asset is not always the most economically viable option.

Companies need a detailed understanding of the fiscal terms of their contractual operating agreements, in terms of production sharing, tax regimes and cost-recovery mechanisms. A company can then determine its economically viable (profitable) production range, based on expected revenues, associated costs and resulting cash flows.

The economically viable production range is defined as production for which net operating cash flow is positive, as reflected by the dark gray zone in Figure 2.

For each production scenario, associated operating costs are calculated for activities designed to increase production, such as drilling additional wells or conducting artificial-lift operations. As shown in Figure 2, the operating cost curve initially decreases as fixed costs are amortized over larger production volumes (X-axis). The cost curve reaches an inflection point (point B) and thereafter begins to increase as more production is added. In this example:

- Point H is the highest economic production for a given oil price of $60/bbl;
- Point B is the lowest break-even price, reached in this case at $40/bbl;
- Point L is the lowest economic production for an oil price of $60/bbl.

**Figure 2: Operating cost curve for production scenario A for an oil price at $60/bbl**

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*Note: “Profitable” volume growth help companies focus their efforts on the right assets. This might mean “shrink” now to “grow” later when conditions become more favorable. In plays where conditions may prevent a restart at a later state, the decision is whether to continue operating uneconomically and if so, for how long.*

*Source: Accenture Strategy, Energy analysis*
Cost and production curves can be generated for multiple production scenarios, with the objective of determining optimal production levels at a given oil price (Figure 3).

Deliberately prioritizing profitable volume growth obliges companies to focus their efforts on the best assets and ensure they do not waste valuable resources developing unprofitable ones. In some cases, this might even mean temporarily shutting in some production in order to establish conditions for faster growth when market conditions improve. In plays where operational conditions may prevent a restart of curtailed production at a later date, a decision must be taken concerning whether uneconomic operations should be maintained and, if so, for how long.

Systematically developing cost and production curves also helps set clear objectives, such as an achievable cost target along the cost curve. This approach enables alignment between stakeholders to deliver on agreed cost-reduction targets.

Figure 3: Operating cost curves for different production scenarios at $60/bbl

![Operating cost curves for different production scenarios](image-url)
The first step in achieving sustainable cost reductions is for the company to improve its understanding of its costs and their drivers. Cost buckets should be rigorously deconstructed so that the fundamental drivers of each cost item can be analyzed effectively and operators can determine the extent to which each driver can be controlled. There are typically five levers for managing cost drivers, each providing varying degrees of control:

**Raise the approval level** for expensive, non-recurrent costs, in order to encourage managers to spend sufficient time preparing a business-case justification before asking their superiors for approval. Though effective in the short term, care must be taken not to burden managers with the bureaucracy of the approval process or stifle their autonomy, curtailing their ability to make quick operational decisions.

**Reduce usage volume and/or frequency** in some cases, reducing the quantity of consumables or usage frequency can generate substantial benefits. For example, reducing the volume of chemicals injected to treat wells or optimizing vessel utilization to reduce frequency of trips can deliver opex savings.

**Renegotiate contractual terms**: This tactic is common during downturns and suppliers often agree to price reductions as activity levels drop. However, as with the first lever, contract renegotiations alone do not necessarily result in sustainable long-term cost reductions. Indeed, price renegotiations can be damaging if gaining a one-off advantage damages the next transaction (this is covered further in Essential No 4).

**Ensure an effective cost-control mechanism and transactional processes**: This is essential for controlling operating costs. In many companies, it is very laborious to establish a clear and effective link between cost drivers and impact on the bottom line. This is mainly because of the complexity of financial reporting structures and transactional processes. Therefore, departments such as Contracts and Procurement, HR and Finance tend to be overstaffed and inefficient. These inefficiencies waste large amounts of money.

**Do it differently.** This is the most effective lever with the most sustainable results, but it is also the most difficult to implement. New technologies and greater standardization have provided opportunities to do things differently and in a more cost-effective manner.

The development and adoption of new technology has helped sustain growth in the E&P industry. Ultra-deep water and shale production were unthinkable 30 years ago. A recent survey of oil and gas operators by Cisco indicated that 25-50 percent of manual processes have the potential to be automated. Some North Sea operators have set up remote drilling centers to reduce the cost of personnel on board (POB) and perform real-time monitoring of well operations. But, for the most part, the industry has been slow to adopt new technology. For example, real-time data monitoring of rotating equipment has been around for over a decade but has still not been widely adopted.

Furthermore, greater standardization of processes and solutions is required to generate economies of scale. Operators should maintain tighter control of innovation, avoid overly complex designs and focus on simpler, leaner solutions. Also, reusing designs or elements of designs that have been proved in previous projects should be encouraged rather than rebuilding from scratch, which is often unnecessarily costly and time consuming.
A case study (Figure 1) illustrates how Accenture Strategy successfully supported an operator to manage costs associated with its offshore supply vessels, using the five levers described above. The project resulted in $6MM of annualized opex savings:

**Raise the approval level:** all emergency requests (those raised with 48 hours of notice or less) to require a written exemption from the Head of Operations before they can be processed.

**Renegotiate contract terms:** fragmented transactional contracts were consolidated into a single master-frame agreement at a lower price (some contracts had been agreed during price peaks).

**Reduce usage frequency:** the travel-logistics schedule was revised, with a reduction in daily trips to each asset achieved by combining trips to asset locations in close proximity to each other.

**Ensure an effective cost control mechanism:**
An initiative was launched to revamp the cost-control system completely, and, in parallel, a cost-control tool was developed to monitor costs to operations awaiting the new mechanism to be put in place.

**Do it differently:** Stronger demand planning helped optimize logistics resources. A control tower was created to consolidate all logistics requests from offshore assets, allocate resources and track performance. Within six months, emergency requests dropped from 50 to 10 percent. Through better visibility, the control tower was also able to streamline vessel routes, reducing total distance covered by 20 percent and reducing the marine fleet by one vessel.

Performance metrics were put in place to track vessel utilization (e.g., deck space, occupied seats) and logistics planning KPIs were included for each Asset Head.

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**Figure 1: Example of cost register for vessel expenditures**

<table>
<thead>
<tr>
<th>Cost parameters</th>
<th>Cost levers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Cost line</strong></td>
<td><strong>Drivers</strong></td>
</tr>
<tr>
<td>Vessels</td>
<td>Spot requests</td>
</tr>
<tr>
<td></td>
<td>Rental price</td>
</tr>
<tr>
<td></td>
<td>Number of trips</td>
</tr>
<tr>
<td></td>
<td>Logistics control tower</td>
</tr>
<tr>
<td></td>
<td>Speed limitation</td>
</tr>
</tbody>
</table>

**Increasing sustainability**

Source: Accenture Strategy, Energy analysis
Essential 3: Concentrate on improving baseline production

A recent report by BP indicated that nearly half of all the oil to be found within the next 40 years will come from already identified accumulations, since reservoirs release just a fraction of the hydrocarbons buried underground. This should be a wake-up call for companies, encouraging them to look more closely at their existing portfolio of assets and to become more efficient at oilfield management, squeezing out more resources for less money. To identify potential opportunities, companies will have to undertake a diagnostic review of existing wells and surface facilities.

Existing wells can be classified into three categories, based on flowrate variations:

**Healthy wells with high and stable flowrates.** These wells require minimal surveillance and this can be automated and done remotely to reduce staffing requirements;

**Sick wells with unstable, wide variations in flowrate.** These represent the biggest opportunity for production increases. They are the best candidates for real-time remote monitoring to quickly detect production problems and launch remedial actions. In the medium term, wells with these types of production challenges need to be grouped together and studied collectively to improve operators’ understanding of downhole conditions that can boost productivity;

**Comatose wells with low and stable flowrates.** These wells represent either a cost-reduction opportunity, if no action is taken, or a production-increase opportunity through a heavy intervention (e.g., workover, perforation) designed to change the well’s production configuration. Selecting the type of intervention would first require an economic business case for the activity in question.

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**Figure 4: Examples of opportunity identification for wells and surface facilities**

**Wells opportunity identification**

- **Flowrate variation**
  - **Sick wells** (unstable flowrate ranging from low to high)
  - **Comatose wells** (low and stable flowrate)
  - **Healthy wells** (high and stable flowrate)

**Surface facilities opportunity identification**

- **Unplanned shortfall**
  - **Production increase opportunities**
  - **Cost reduction opportunities**

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Source: Accenture Strategy, Energy analysis
Opportunities for increasing production from surface facilities can be identified by combining unplanned shortfalls with a criticality analysis (Figure 4). Some examples of production-increase opportunities (top right hand of graph) from surface facilities include:

- Real-time monitoring of critical assets to detect anomalies early and implement mitigation plans;
- Reviewing preventive maintenance schedules to reduce the number of failures and increase equipment availability (Mean Time between failures versus Mean Time Between Preventive Maintenance);
- Reducing mean time to repair critical assets by stocking more spare parts in the warehouse.

With oil prices low by recent historical standards, operators are pressing suppliers for discounts and price cuts.

However, indiscriminately squeezing supplier margins encourages suppliers to cut corners and engage in risky or unsafe work practices, sacrificing quality in an attempt to save their own costs and preserve margins. Short-term cost savings from supplier discounts are eventually eroded by the cost of re-work, budget overruns, project delays and reliability issues in low-quality jobs. In any case, cost savings arising from supplier discounts are likely to have a minimal impact in terms of offsetting the huge revenue loss that has resulted from the ~50 percent oil price drop since June 2014.

It is time to think differently; long-term success requires changes in the behavior both of operators and suppliers. Instead of simply seeking price cuts from suppliers, oil and gas companies should attempt to collaborate more closely with their suppliers and create a mutually beneficial relationship that creates value and eliminates waste.

We see three critical levers for achieving this objective:

**Defining appropriate incentives to share gains or losses**

At present, supplier contracts seldom incentivize contractors to focus on improving efficiency. They are usually lump-sum contracts won by the lowest bidder. SBC’s capital projects survey revealed that over 60 percent of contracts still use the “three bids and a buy” contracting model.

This is particularly true for drilling contractors, some of whom are paid by the day, almost regardless of progress. Incentives for working faster are virtually non-existent. Consequently, many service providers remain within their own domain and do not consider the full effect of their actions or inactions on the overall work flow.

The principal-agent dilemma arises because sometimes the agent (supplier) is able to make decisions on behalf of, or that impact, the principal (operator); if the incentives of the two parties are not aligned, the agent is motivated to act in his own best interests rather than those of the principal.

The goal therefore should be to reduce information asymmetry and manage conflicts of interests between operators and suppliers.
Defining the right contracting model can deliver value both for operators and suppliers. Under appropriate conditions, new collaborative working models (such as long-term frame agreements) can result in a win-win outcome. However, such contracting models only make sense if they create value for operators and incentivize suppliers.

Potential sources of value for operators include: reduced variability in performance through standardization; systematic application of lessons learned; and efficiency savings from common working methods and jointly developed work packages. Suppliers, meanwhile, can benefit from the certainty in revenue that long-term partnerships provide and the reduced cost of tendering repeatedly for the same type of work.

Collaborative operator-supplier contracting models can deliver huge benefits if properly implemented. As an example, an operator recently executed five development projects over a period of eight years, working with the same suppliers. The arrangement yielded a 60 percent reduction in costs and a 50 percent reduction in construction time between the first and the fifth development.

We have observed a slow migration towards greater collaboration between operators and suppliers within the industry. Shell and WorleyParsons signed a global agreement in 2013, with a five-year renewal option, covering engineering, procurement, and construction services for surface facilities projects in unconventional oil and gas assets. BP and Aker Solutions also signed a two-year agreement in 2013, with a four-year renewal option, covering engineering, modifications, and maintenance services for BP-operated oil and gas fields in offshore Norway. We believe these types of working agreements should be encouraged.
Forming joint working groups to achieve efficiency and cost targets

Operators need to work more closely with their suppliers to achieve production-cost optimization targets and resolve operational challenges. For example, Accenture Strategy’s analysis of an operator’s fracking activity in North America indicated potential for a 200 percent improvement by boosting productivity and reducing unproductive and non-job time.

To improve performance, operators and services companies can form Joint Efficiency Teams (JETs). The JET can carry out an end-to-end assessment of efficiency opportunities, from planning through execution, and start the process of implementing the actions necessary to achieve an improvement in performance. A governance body, with representation from both parties, should periodically review JET activities, based on agreed performance-evaluation criteria.

Services providers often have greater experience than operators in specific areas and niches of the E&P value chain. A JET would ensure lessons and best practices are captured, and the right behaviors reinforced in both the operator and supplier organizations.

Similar transitions have occurred in other industries, such as aircraft manufacturing. Engine manufacturers no longer just sell engines and spare parts, but also monitor the engine’s performance over its lifetime to better understand its operating conditions and help airlines reduce downtime, thus improving asset productivity. A similar approach can be applied in the oil and gas industry.

Supplier tiering

Other industries have achieved better integration with their suppliers through tiering. The automotive, aerospace, and electronics industries have all restructured around original equipment manufacturers (OEMs) and tier-1 (primary) suppliers across their value chains. These three industries share some common trends in terms of (1) early involvement of suppliers in product design; (2) joint R&D efforts and initiatives between OEMs and suppliers; and (3) more risk and reward sharing between system integrators and OEMs.

As in these industries, the oil and gas supplier market can also tier itself around the main activities of its value chain. Tier 1 suppliers can consolidate around field development, well delivery, engineering and construction, and field management, while clusters of Tier 2 OEMs work together to support the primary Tier-1 services providers.

Today, operators sometimes have to deal with as many as 15 different suppliers and OEMs during production operations. These can create numerous problems in terms of equipment compatibility and costly, complex inventory-management systems. Supplier tiering would help resolve some of those problems. The number of automotive industry suppliers, for example, has fallen by 80 percent over the past three decades, yet the size of the supplier market has increased six-fold in value over that time.
Essential 5: Change culture

Place greater emphasis on planning, accountability and service quality.

Operators need to change their operating model to reinforce cost consciousness and focus on continuous improvement if they are to manage their costs successfully.

Stop the firefighting attitude

Integrated activity planning needs to be strengthened. Often, operational decisions are made in a reactive rather than proactive manner; as a consequence, avoidable costs are incurred on rework and last-minute modifications and orders.

A stronger focus on demand planning is required to prevent idle resources from incurring costs and better anticipate workload and resource requirements. Accenture Strategy recently helped an oilfield services provider reduce its asset base by 30 percent without lowering its service-delivery standards. At the core of this exercise was the set-up and roll out of a centralized demand planning group to forecast demand requirements, integrate work programs and optimize activity planning. Better visibility resulted in more effective, data-driven decision-making.

Enforce accountability and ownership

A culture of accountability and clear cost ownership should be reinforced. The lifecycle of E&P projects is such that individuals involved during one phase of a project might be reassigned during the next phase. Single point ownership and accountability can become diluted as the project evolves; as a result, teams sometimes make decisions that have short-term benefits but that destroy long-term value. Strong project governance capabilities are critical. Conducting periodic project-assurance reviews and setting up phased milestones for investment decisions will help ensure that capital is only committed to activities with justifiable business cases.

Reduce organizational inefficiencies

Over the past decade, efforts to build incremental production and tackle increasing field complexity have driven companies to expand their operations significantly, in the face of rocketing salary inflation and inefficiencies in some regions. In many cases, these companies have ended up with large, complex organizational structures, in which roles are duplicated, lines of accountability are blurred and inefficiencies are common.

Companies should aim to establish lean organizational structures that clearly delineate responsibilities and enhance the free flow of timely and accurate information along the chain of command.

Management systems should be established to support data-driven decision-making and increase performance visibility. Operational reports should not just be a data dump or a rehash of historical events; they should be forward-looking, highlighting current performance and risks to future delivery. In a low oil-price environment, stronger performance management is essential.

No one knows how long depressed oil prices will last, how they will affect the industry or whether the oil price will return to recent highs, of nearly $115/bbl. But one thing is certain: a more sustainable approach to cost management—embracing new ideas and, indeed, a new mindset—is needed. Companies bold enough to change will be those that thrive.
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