

The risks and rewards of outsourcing

In the digital age, companies in the energy and materials industries must balance the classic advantages of outsourcing a segment of the value chain with the new realities of shutting down their strategic options if a supplier becomes too powerful.

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Outsourcing is nothing new to big companies in the energy and materials industries. Many have relinquished control of lower-value functions, such as payroll, or even slivers of the value chain that are more central to their business. Mining companies lease trucks and rail freight, for example, and most oil companies outsource drilling.

To date, however, these same companies have seen little reason to let go of higher-value functions, such as exploration and operations, as their scale has enabled them to develop world-class capabilities in-house. But data are changing the game. In a data-rich world, their capabilities could be exceeded by those of their suppliers. And while this holds the potential for greater efficiency and effectiveness, it also comes with major risks. Unless handled carefully, there is a danger that an outsourcing arrangement that delivers gains in the short term could, over time, create an unhealthy dependency, eroding competitive advantage and strategic options. No company can afford not to join the digital ecosystems forming around every industry, but each must do so without giving away the keys to the business.

The case for and against extensive outsourcing

To understand the digital forces at work, consider a global manufacturer of turbines: it probably already has more data on their performance than even the largest customer and so could, potentially, maintain them better. It might make sense, therefore, for customers to outsource the supply and maintenance of turbines rather than buy them and maintain them in-house.

In the minerals industry, some companies already employ external technology specialists to track and improve productivity in their processing plants using the Internet of Things (IoT). Some of these specialists then aggregate the data they collect from many different companies. The result could be a burgeoning new business—a platform with vast

libraries of data and algorithms to which customers would be able to buy access. As with the turbine manufacturer, the insights that a platform operator would be able to deliver using these data could be far greater than those any single company could hope to uncover on its own. The prospect then arises of platform companies in unrelated areas, such as banking, groceries, and healthcare, moving into the energy and materials value chain. Microsoft has already launched predictive-maintenance services enabled by the IoT. And could a company such as Amazon take over logistics?

Many specialists and niche suppliers are already emerging with offers to take over processes or whole parts of a business. And their services could prove tempting, given the potential for rapid rewards. The operations of a steam boiler could be optimized in weeks by comparing its performance data against the supplier's much bigger proprietary database, for example. Procurement costs could be rapidly reduced by a specialist with automated cleansheet models that reveal with ease the real cost of a service or product and any room for price negotiations.

And it is not just big companies that stand to benefit. Smaller ones could, for example, develop a fleet-maintenance strategy as sophisticated as those of the heavyweights in their sector by outsourcing management to a global supplier that can collate data from the hundreds of thousands of sensor-laden vehicles it manages in order to optimize the fleet's performance.

Outsourcing boundaries

The devil is in the detail, of course. For the purposes of this article, we define "outsourcing" as the provision of an ongoing service, such as vehicle maintenance or railroad operations, rather than a one-off service, such as building IT infrastructure. As in the old world, two factors will determine which ongoing services lend themselves to outsourcing: whether outcomes can be clearly defined, and the

supplier's edge. But in a data-rich world, there are new dimensions to both.

Definition

Companies contemplating outsourcing a function need to be certain that the desired outcomes can be clearly defined in a contract and progress toward them monitored. Hence, management accounting is hard to outsource. So is work conducted with a supplier in agile teams, where the product or function constantly evolves. In an agile world, a contractor will commit time and resources but cannot generally guarantee a particular result. Indeed, sometimes the exercise will fail. Therefore, joint ventures or gain-sharing agreements might be more suitable than an outsourcing contract when working with suppliers in this way.

Bear in mind, however, that data and artificial intelligence now make it easier to draw up contracts, extending outsourcing's potential reach. For example, more accurate demand prediction through machine learning coupled with tighter control over supply chains through sensors and tracking devices make it easier to define performance in a contract to outsource materials management. And in some respects, the more a company outsources, the easier it is to specify the outcome. It is more straightforward to define an outcome for a whole service, such as railroad transport, than for a small component of that service, such as railroad-track maintenance. The level of activity required to maintain track is hard to gauge, but that becomes the railroad operator's concern once the tonnage of coal to be transported has been quantified.

The supplier's edge

If a function lends itself to being contracted out, the next consideration is the supplier's edge: Does it have a structural advantage? A structural advantage might lie simply in a supplier's lower costs. But in a data-driven world, two other sources of advantage are particularly important. The supplier might have

data and technology that a customer would struggle to replicate: access to a large data pool on compressor performance, say, or a proprietary solution to finding dependencies between large data sets or parameters. Or it might have skills and capabilities the customer cannot match. With demand for people with big data skills outstripping supply, for example, outsourcing could be one of the few practical ways for a resources company to secure the talent required to develop algorithms for predictive maintenance.

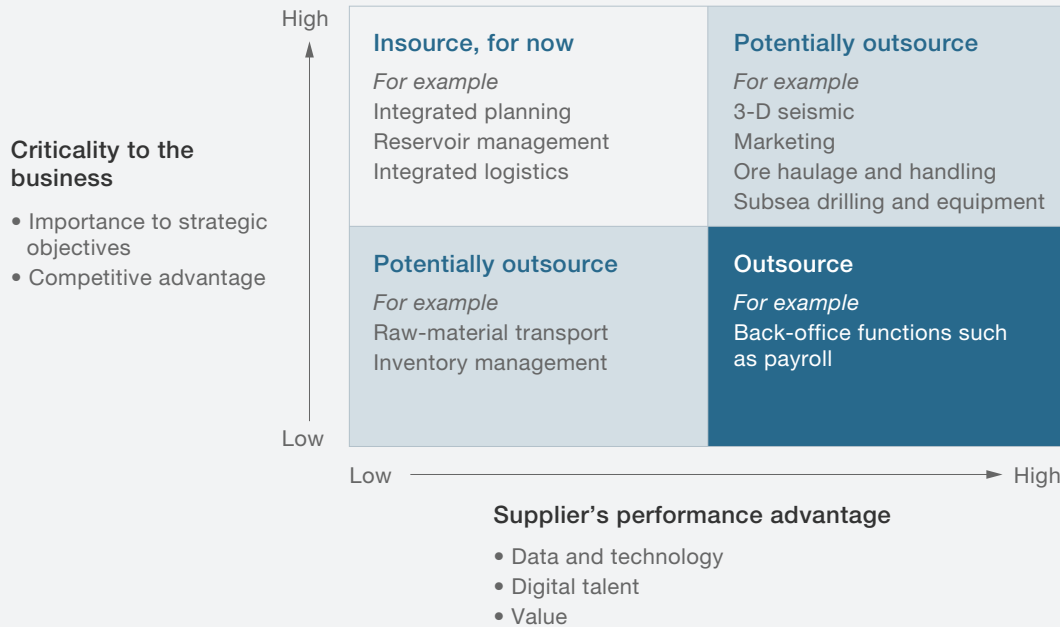
When a supplier offers a structural advantage in low-value functions, the decision to outsource is not hard to make as little value is at risk. But increasingly, suppliers may hold an advantage in functions deemed more critical to the business, such as ore extraction or seismic surveys, or in an area where, hitherto, the company has held a strong competitive advantage, such as finding and developing attractive resources or operational excellence (exhibit). Here, companies need to proceed much more cautiously when outsourcing.

With time, technology will undoubtedly break up the traditional value chain in the energy and materials industries as companies are forced to conclude they enjoy a competitive advantage in far fewer functions than they do today. Eventually, they might be able to outsource entire stages of the value chain. A miner could outsource all its operations—blasting, extraction, haulage, processing, freight, and marketing—to contractors with the data and accompanying expertise to drive down costs and raise productivity and safety. Such developments would force a radical reassessment of what constitutes a core business capability, and different companies would likely come to different views. One might find that discovering and developing new resources is its core strength; another might realize that marketing skills set it apart. The time has not yet come to make such seemingly existential decisions. The future impact of technology remains far too unclear. What companies should do, however,

Exhibit

In a data-rich world, even those functions once thought critical to the business might be candidates for outsourcing.

Example: energy and materials companies



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is ensure they capture the short-term gains that outsourcing can deliver in a way that does not limit their future strategic options. Following certain ground rules will help.

The outsourcing ground rules

Examples of extensive outsourcing of high-value functions are, for now, few and far between. Yet based on the dynamics we have seen gathering strength, we suggest three ground rules companies should observe in a fast-changing world.

Keep digital control in-house

Companies need to guard against outsourcing arrangements or partnerships that prevent them from adopting new technologies or contracting

with new vendors. Hence, they need to avoid deals that hinge on the use of proprietary or niche technology. Open technology standards will be key to maintaining future strategic options.

They also need to control data and system architecture so they can change with the times as new and unforeseen options emerge. Three years ago, for example, few businesses knew how important cloud computing would become. While support might be sought for the execution of a technology strategy, decisions about what data to keep, where to store and process them, and how applications can access and manipulate them need to be made by the company alone. In addition, any outsourcing arrangement must be structured in a

way that enables the architecture to be changed with limited penalties.

Companies must also maintain control of their data and the insights derived from them. Sharing data, selectively, can be beneficial. Two companies that pool data on well failures will both be able to improve their models. But they also both need to keep ownership of their data, for three reasons. First, good data, and large volumes of them, make for better decisions, as they are used to train advanced-analytics and artificial-intelligence models. Those with the biggest and best databases will be those with the best models and predictive power, able to outcompete others. Second, giving away data increases dependency on suppliers. If, for example, the data generated from a company's machinery are owned by the machinery's manufacturer, the company will be reliant on the manufacturer to help it optimize operations and will find it harder to build its own advanced-analytics skills. Third, the data it supplies could be used to help build models that are sold to competitors.

The same goes for any insights generated by the data and the algorithms a provider might develop to optimize a customer's performance. These should be the company's property, or at least the company should retain the right of use even after the outsourcing contract ends. Otherwise it might find it has to retain the supplier as long as the algorithm is being used and might not be able to update, train, or combine algorithms.

Suppliers that offer use of their platforms in exchange for data at what seems like a bargain price should be treated with caution. The data are likely to become someone else's product.

Keep contracts flexible

Both parties need suitable incentives for an outsourcing arrangement to succeed. The usual ones—sharing gains and rewarding outcomes rather

than inputs—still apply in a digital age. But where outcomes are concerned, flexibility will be required.

Technological developments could necessitate the frequent rewriting of agreed outcomes and how they are measured. For example, a fall in supply-chain costs might be the main aim at the start of a contract, but overnight delivery of spare parts could become more important once predictive-maintenance technology beds in. Likewise, advances in technology during the life of a contract might deliver additional, unanticipated cost savings that would accrue to the supplier unless specified otherwise. Companies must thus ensure they can exit a contract or change the terms without severe penalties and avoid locking into lengthy agreements even if substantial cost savings are promised. Eventually, it might be desirable to take the work back in-house or use another supplier to maintain competitive tension.

Maximize competitive tension

The third ground rule, maintaining competitive tension, takes on even more importance in the digital era because of the winner-takes-all dynamic. The more data a supplier has, the better its insights, the more customers it attracts, the more data it gathers—and so on. Soon, its scale enables it to outperform other suppliers and create a dominant position.

The risks of outsourcing to a single, dominant supplier might not be obvious initially, as digitization reduces the barriers to entry, prompting a proliferation of new players, all rushing to capture value and competing strongly. But over time, the need for scale and the benefits it delivers will bring about consolidation, reducing competitive tension. The risk of losing leverage over a supplier through a lack of credible competition is therefore significant. In addition, becoming too entrenched with a single supplier can make switching costs high, as many companies have found with enterprise-resource-planning systems.

To help maintain a healthy level of competition, large companies can spread their custom among several suppliers and nurture smaller ones, although this does not come without a cost either. Interfacing with the technology stacks of various suppliers, for instance, can eat up time and money—another reason to keep the technology strategy in-house and use open standards.



Outsourcing can be hugely beneficial and sometimes even critical to capturing the potential of new digital technologies and capabilities. Some companies might choose to outsource in order to buy time to build their own skills and capabilities, while smaller

ones might outsource to leverage the capabilities of new suppliers and their vast data sets, gaining insights that once only the largest companies could hope to enjoy. Ultimately, when up against increasingly smart and capable suppliers, many companies might have to rethink their core business. But in the meantime, they need to be highly strategic in their decisions about what to outsource and how. ■

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