

MANAGEMENT SUMMARY

Oliver Wyman study on offshoring

Keys to Success for Automotive Development in Low-Wage Countries

- **Transferring development activities to low-wage countries can reduce costs by up to 30 percent**
- **Offshored engineering work will grow 700 percent by 2015**
- **Many companies are offshoring an increasing amount of engineering work, but there is still enormous untapped potential in this area**
- **Offshore business model, selection of partners, and structuring of operating partnership are key factors for success**

Transferring development activities to low-wage countries, otherwise known as offshoring, allows companies to significantly reduce costs. A recently completed study from Oliver Wyman shows that costs can be reduced by twenty to thirty percent, depending on the vehicle model, development services required, and the country to which development work is transferred. In particular, Eastern Europe, especially Poland, the Czech Republic, and Hungary, and India allow companies to achieve above-average reductions in development costs. Automotive suppliers and engineering firms are already utilizing workers in low-wage countries to perform development work. Offshored work currently comprises only a miniscule fraction of total engineering output (less than one percent), but that figure will climb as high as forty percent for some services. The key to successfully offshoring engineering tasks is to follow an appropriate strategy, select suitable partners, and most importantly, to plan exactly how the operating partnership will work.

In 2005 in Germany, the automotive industry spent about €16 billion on research and development (R&D). As a whole, the automotive industry spends about seven percent of its annual sales volume on R&D, making it an extremely R&D-intensive industry. In Germany, about 85,000 employees have development-related jobs at automobile manufacturers, suppliers, and engineering firms. Accounting for twenty-five percent of worldwide automotive development expenditures, Germany holds the top spot, ahead of Japan and the United States. Therefore, engineering is not only important to individual companies in the industry, but also a hugely significant factor in overall employment and in maintaining Germany as a viable business location.

German development facilities face tremendous cost pressure

Development services provided by German employees based in Germany face mounting cost pressures. Automobile manufacturers are enacting clear requirements for reducing their engineering costs, have achieved full transparency with regard to hourly costs, and are already specifying targets for the percentage of engineering work to be performed offshore. Per-hour costs for engineering services are up to 70 percent lower in India than in Germany. Even when costs related to training, management (overhead), coordination and lower productivity are factored in, offshoring still yields a cost advantage of up to thirty percent. German development facilities are under enormous cost pressure. Some development-related services have reached the point where they must be performed in low-cost areas to keep costs competitive. In places like India, development facilities often work 24 hours a day, seven days a week in a multiple-shift environment. As a result, such facilities can offer significantly shorter development cycles.

Offshore percentage of development work to explode in the years ahead

Half of the thirty experts at automobile manufacturers, automotive suppliers and engineering firms surveyed for the Oliver Wyman study said that offshoring already plays an important role. One-third of the companies surveyed already have offshoring initiatives for engineering. Successful automotive suppliers and engineering firms will offshore anywhere from five percent of design work to forty percent of calculation and simulation work. This will result in a seven-fold increase in worldwide offshored volume from today's level of €600 million to about €4.5 billion in 2015. The 2015 figure represents five percent of global R&D expenditures for the automobile industry. Although offshoring will continue to have little impact on automobile manufacturers' in-house development capacities, suppliers are ramping up their offshoring efforts to as much as five percent of overall R&D expenditures. Engineering firms are hitting offshoring targets of fifteen percent and more. Following this trend, IVM Automotive, a German vehicle integrator and full-service engineering firm, has announced a partnership with Quantech Global Services in India. Today, offshoring a large percentage of calculation and simulation work makes good sense. Typical services that are being sent offshore include finite element analyses, the creation of calculation models, and statics and load analyses. But electrical and electronic development work, two rapidly growing areas, are being offshored to an increasing degree as well. In the ECU development area, for example, software coding, hardware design, and the design and testing of entire assemblies can be offshored. As electrical integration tasks, CAD modeling, routing, and packaging can also be offshored. Detail design engineering tasks such as sample and prototype construction are also suitable candidates.

Barriers to offshoring automotive development

Engineers in many low-wage countries have outstanding qualifications. However, due to the spike in demand, there is already a shortage of engineers, particularly those with specialized automotive expertise. One must also consider the language and culture barriers inherent in partnering up with developers in Eastern Europe or Asia. This makes it all the more important to bundle service packages of a very repetitive nature so they can be handled by the same partners over the long term using standardized processes. Furthermore, it is often necessary to have German-speaking employees work at the partner's facility.

However, utilization of existing personnel capacity at the parent development company generally takes priority, resulting in a critical barrier to offshoring. Employees tend to oppose offshoring initiatives because they create additional coordination work, they "disturb" internally established channels of cooperation, and they cause employees to fear losing their jobs. Offshoring also increases the risk of "knowledge bleed." This is why the choice of partner and services offshore are critically important. In particular, development services that are not part of the company's up-and-

coming areas of core competence and that fail to differentiate the company from its competitors are suitable candidates for offshoring.

Guidelines for successful offshoring initiatives in automotive development

Although development capacity has stagnated in Germany, offshoring also helps secure jobs in Germany as well; a healthy mix of onshore and offshore work increases the company's overall competitiveness. This creates a new freedom to innovate at the company's main development facilities at its headquarters. The difference between success and failure lies in selecting the right offshore business model and consistent attention and action to ensure that the connection is not lost. Offshoring engineering work should be more than a hasty move to reduce costs; it should be strategically motivated and integrated into the company's value added and procurement strategy. Thus, it is necessary to set strategic goals, select appropriate service to offshore based on defined criteria, choose the facility and partner wisely, and provide a structure for the operating partnership between the offshore and onshore facilities.

An offshore business model that could work well, especially for automobile manufacturers and automotive suppliers, is the use of an engineering firm near the central company development facility as an interface to offshore engineering partners. Therefore, engineering firms will need to have an offshore business model and make appropriate service options available in the future. It is important to reserve offshore development resources with a signed contract to ensure that lessons learned are not lost. Automotive suppliers and engineering firms can operate their own offshore development facilities as well. Due to higher one-time costs and start-up costs, offshoring one-time projects does not yield the expected cost savings.

For each engineering specialty, companies should define in-house core services and the level of service to be provided in-house. When developing offshoring initiatives, it is important to identify more than just which countries are suitable – find out about regional cost differences and facility advantages and take a long, hard look at the net cost benefit, being sure to include all additional expenditures for employee training, coordination and management. Also be sure to include one-time costs (for a facility and/or partner search, negotiations, and contracting) and start-up costs due to inefficiency and the inevitable learning curve (for example: additional measures and resources for quality assurance and project coordination).

Internally, be sure to build expertise pools of project coordinators who specialize in offshore project management and can act as a primary interface between the customer, internal resources at the central company development facility and offshore units. Such resources are best paired with longer-term involvement in target countries ranging from partnerships in low-wage countries to a network of company-owned development facilities distributed around the globe. On an operating level, successful offshoring requires integrated process responsibility and standardized processes that extend beyond national or continental borders. IT infrastructure and communications standards must be harmonized to allow for smooth, hassle-free data exchange with no data losses. Including decision-makers and employees at the earliest stages of the process creates an environment where people communicate openly and helps companies overcome internal resistance to change.

Recommended Action Plan for Off-Shore Automotive Development Initiatives

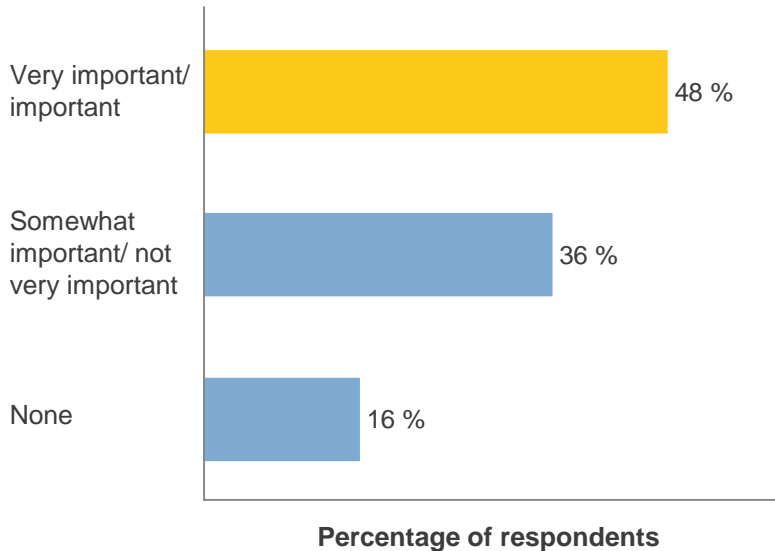
1. Look at offshoring as a strategic contribution to preserving competitive automotive development activities.
2. Embed offshore engineering in longer-term value added and procurement decisions.
3. Approach offshoring initiatives as a systematic strategy and change process in order to successfully exploit potential opportunities.
4. Identify specific areas for potential cost reduction by vehicle module, development service, and cost block – and include opportunity costs in your calculations.
5. Create an “offshoring road map” for development that takes into account all stakeholders and restrictions.
6. Keeping your goals in mind, select best-fit partners and your own best-fit employees and make them “offshoring managers,” and build long-term partnerships where appropriate.
7. Design your operating partnership and the cross-company integration of processes and systems in an efficient manner.
8. Include decision-makers and employees from the earliest stages of communications and change management efforts.

Importance of Offshore Engineering

Offshore engineering plays a very important role for about half of the experts surveyed. About one-third of the companies surveyed already have offshoring initiatives in place

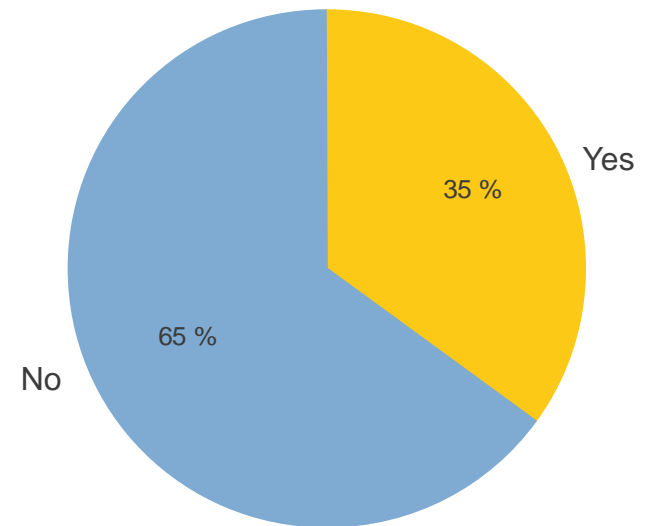
Question 1:

How important a role does offshore engineering play in your immediate professional environment?



Question 2:

Does your company already have concrete offshoring initiatives for development work?

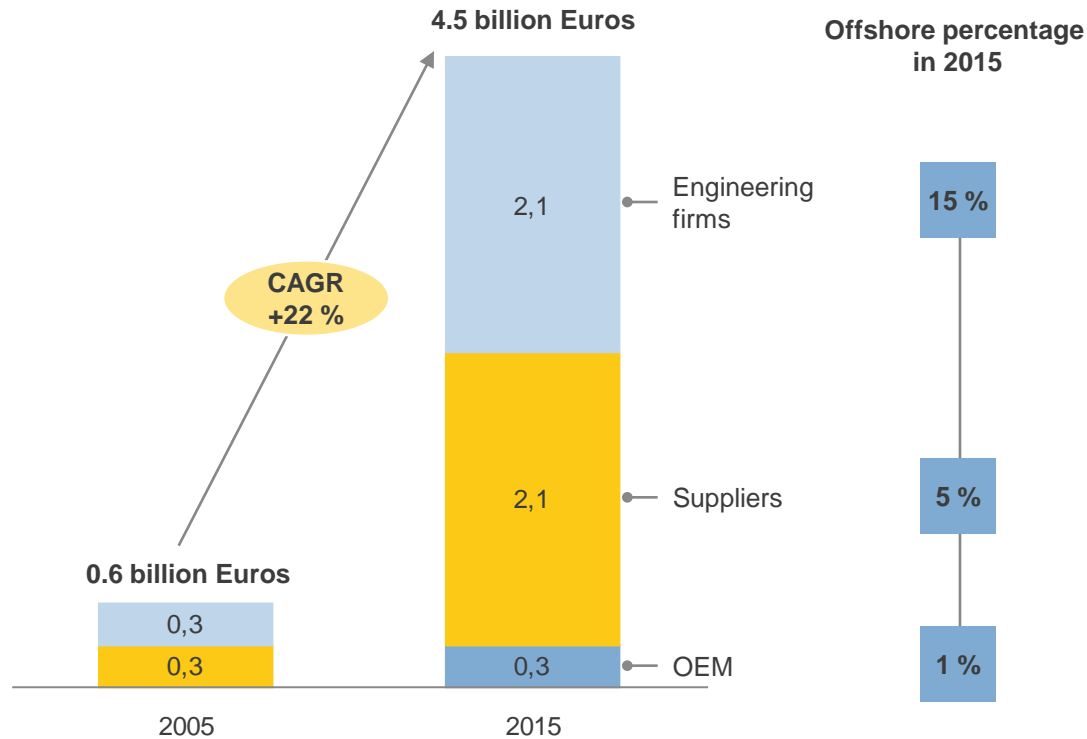


Market Volume of Offshore Engineering in the Automotive Industry

Over the next ten years, the market for offshore engineering will grow by about 700%, increasing from approximately 600 million euros today to 4.5 billion euros by 2015

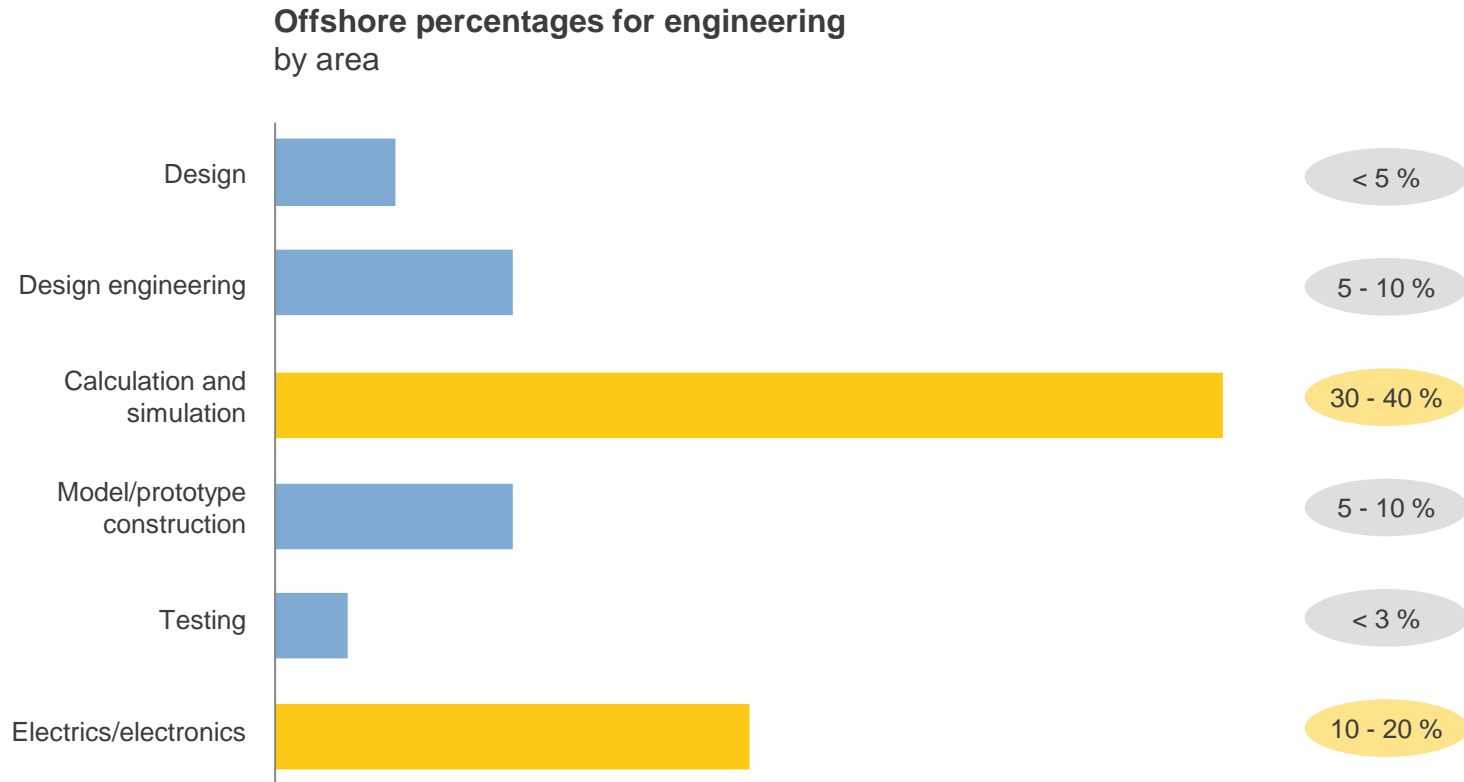
Offshore engineering by client

Passenger cars and commercial vehicles, worldwide



Offshore Percentages by Area

Targets for offshore engineering are especially high in calculation and simulation as well as in electrics and electronics



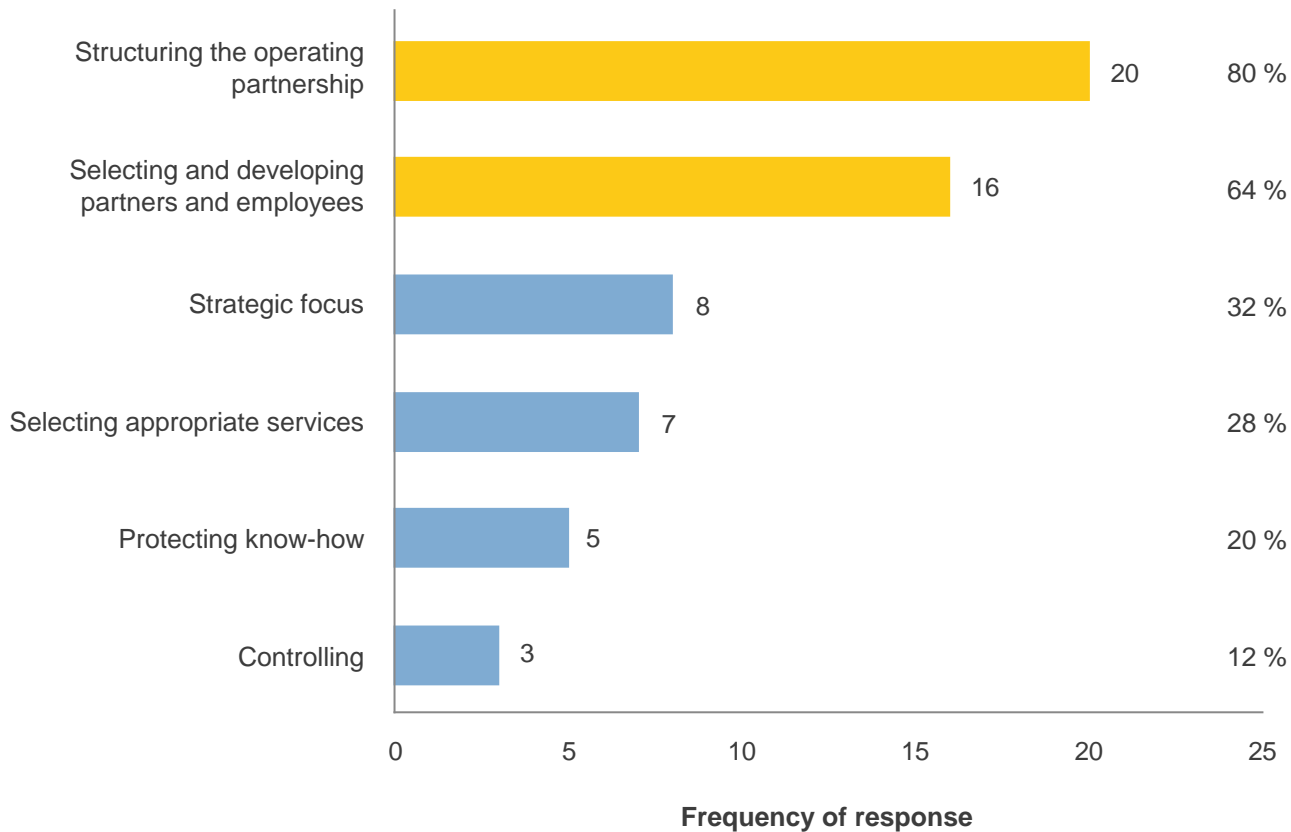
Source: Oliver Wyman project experience

Factors for Success

Interviews with experts show that the practical design and implementation of operations management issues are a major factor in the success or failure of offshoring initiatives

Key factors for the offshoring of development activities

N = 25, multiple answers possible

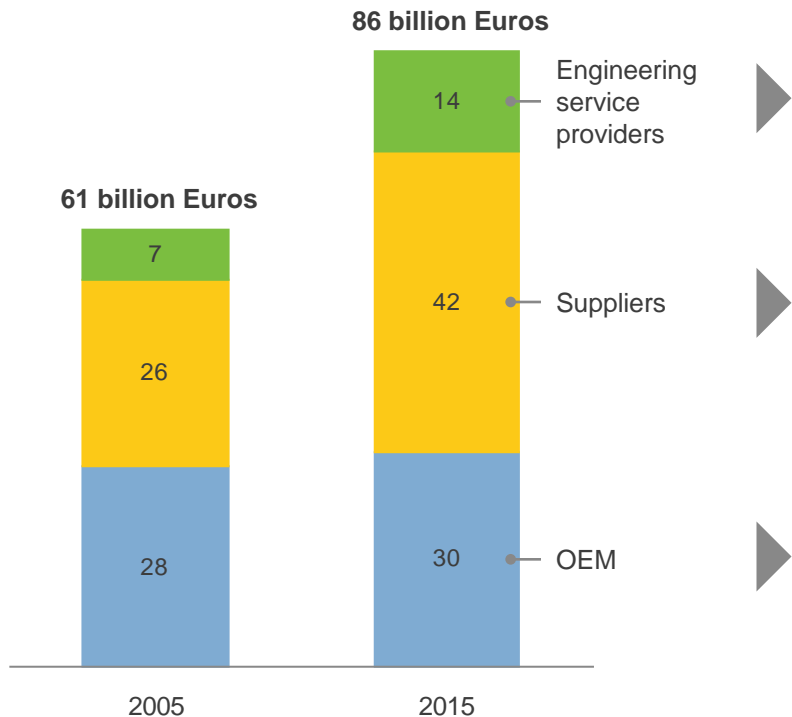


Offshore Engineering by Client

Increased R&D spending at suppliers and engineering service providers is a major driver of increasing offshore engineering volume

Automotive industry R&D expenditures

Passenger cars and commercial vehicles



Offshore percentages and volume

2005

2015

