Aftermarket service is now an important driver of revenues and profitability for industrial equipment manufacturers. The shift from traditional product-based to services-based business models requires organizations to develop innovative service programs and achieve service excellence. Intelligent operations enabled by rethinking business processes with advanced technology and analytics at their core and a feedback loop for continuous improvement can help companies navigate this change successfully (Figure 1).
Respondents in the aftermarket services industry were primarily from North America.

**Business priorities**

**Customer satisfaction and cost efficiency are the top business priorities.**

![Figure 1](image1)

**Figure 1**

**IDC Manufacturing Insights** conducted a study, commissioned by Genpact, to get a deeper understanding of current and emerging priorities and challenges, along with the level of readiness and initiatives to address those priorities, within the industrial equipment sector regarding aftermarket and engineering services. The survey respondents comprised **52 decision makers from the aftermarket services** within the industrial equipment sector across all major geographies and verticals.

![Figure 2](image2)

**Figure 2**

Source: IDC White Paper, Navigating the changing landscape of aftermarket and engineering services in the industrial equipment sector, sponsored by Genpact, September 2014

The values above are a percentage of total respondents who mentioned the priority as one of their top three priorities for the next two years. Numbers may not add up due to rounding.
The IDC Manufacturing Insights study revealed that the top focus for companies in terms of aftermarket function over the next two years is to **enhance customer satisfaction**: 85% of respondents indicated it is one of their top three business priorities, and 44%, 21%, and 19% indicated it is the first, second, and third most important priority, respectively. The second ranked priority is to **optimize cost while maintaining the same service levels**, which was selected by 65% of respondents overall. Both focus areas require companies to look at enhancing the quality of support delivery by improving the value per dollar of the customer impact generated for costs incurred in customer service (Figure 2).

As organizations seek to offload expensive assets from their balance sheets, there has been a global shift to the adoption of an operational expense model, in which organizations pay for the service the asset delivers.

For companies that manufacture heavy industrial equipment, this shift represents a fundamental change in the business model, since equipment manufacturers must now have a clear view of how the product is going to perform in the field, have knowledge of usage before failure, know which parts will require replacement, and develop and maintain the product efficiently.

However, **the more complex the product task, criticality, and risk of failure**, the **higher the amount of investment required to develop the product and associated services.** Therefore, oil & gas and technical machinery are transitioning toward service-based business models at a slower pace compared to **construction and aerospace machinery**, which lead the pack in growth (Figure 3).

**Higher product complexity requires greater investment to enhance service revenue.**

What is the expected change in the contribution of service revenues to your business from the current contribution over the next two years?

**Source:** Genpact Analysis, IDC survey findings, Navigating the changing landscape of aftermarket and engineering services in the industrial equipment sector, sponsored by Genpact, September 2014

**Technical machinery** includes semiconductor line machines and coal plant monitoring devices, and **capital medical machinery** includes discrete medical equipment.
Optimizing aftermarket services

The use of analytics for predictive maintenance (56%) and the optimization of processes through reengineering (44%) are the two high-priority initiatives in implementing aftermarket services. As expected, cost-intensive activities such as deployment of a 24/7 equipment monitoring workforce (15%) was lower in the list of focus areas for aftermarket executives. Implementing aftermarket services requires a sequence of initiatives at different layers: in the product and with customers, field teams, IT systems, and remote data management teams and partners (Figure 4).

The approach to implementing and optimizing aftermarket services is divided into two key areas.

The first approach is the use of analytics to understand situations on ground and exercise options, with predictive maintenance the area of focus, with the majority of respondents looking to further evolve this area.

The second approach is to adopt reengineering for process optimization with some also looking to implement command-and-control centers that would enable remote access and control of under-performing assets.

Implementation preparedness

The results of the survey indicate the need for an integrated approach to implementing cost-effective processes, analytics, and technology to support the move toward improved aftermarket services. Addressing them in isolation will not yield the improvements required, since all three must addressed together, which is a challenge for many organizations; this typically requires new expertise. Skillsets required are in shortage, and the expertise deficit is high, as the field of predictive analytics is still relatively new.

Of the total pool of respondents, close to 50% were not fully prepared regarding technology,

Optimizing process, analytics, and technology integral to accelerate the transition to service-based models.

What are the top three initiatives you will undertake to optimize your aftersales and asset management functions in the next two years?

<table>
<thead>
<tr>
<th>Initiative</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>More use of equipment data analytics for predictive maintenance</td>
<td>56%</td>
</tr>
<tr>
<td>Apply re-engineering to optimize processes</td>
<td>44%</td>
</tr>
<tr>
<td>Optimize spare parts inventory</td>
<td>42%</td>
</tr>
<tr>
<td>Employ analytics to improve asset optimization and service profitability</td>
<td>42%</td>
</tr>
<tr>
<td>Streamline the data management process</td>
<td>37%</td>
</tr>
<tr>
<td>Establish a centralized equipment monitoring center</td>
<td>29%</td>
</tr>
<tr>
<td>Deploy a 24*7 equipment monitoring workforce</td>
<td>15%</td>
</tr>
</tbody>
</table>

Respondents rated the top three initiatives. Values above are calculated as the number of responses received by the initiative as a percentage of the total number of respondents.

Source: IDC White Paper, Navigating the changing landscape of aftermarket and engineering services in the industrial equipment sector, sponsored by Genpact, September 2014

Figure 4
process, and analytics. Analytics represents the weakest link, though not significantly, in relation to the other two areas (Figure 5).

The interdependency of each system upon the other is a prime weakness, and any defect or glitch can render ineffective. This combination of process, analytics, and technology are most efficient when all three processes work in tandem, supplementing each other and complementing their weaknesses to deliver maximum impact.

**Technology challenges**

Organizations face technology challenges related to asset connectivity, remote monitoring, diagnostics, and prognostics. Data management must be addressed simultaneously to ensure data quality (accuracy, uniform structure), analysis, and reporting in a timely manner, in order for the analysis results to be a true representation of the equipment situation.

Inventory management is often the biggest challenge, since the majority of maintenance is reactive instead of proactive, leading to no foresight of inventory to be maintained. Reliability models and predictive analytics can help reduce the portion of reactive maintenance activities, ultimately leading to efficient deployment of field teams to remote locations.

### Analytics is an area with significant scope for improvement.

What is the level of your overall preparedness for the following over the next two years?

<table>
<thead>
<tr>
<th></th>
<th>Fully prepared</th>
<th>Not prepared and somewhat prepared</th>
</tr>
</thead>
<tbody>
<tr>
<td>Asset connectivity and infrastructure</td>
<td>56%</td>
<td>44%</td>
</tr>
<tr>
<td>Quality of connectivity and its monitoring</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Service contract management</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Data management</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Field service and parts management</td>
<td>50%</td>
<td>50%</td>
</tr>
<tr>
<td>Reliability-based failure forecasting</td>
<td>52%</td>
<td>48%</td>
</tr>
<tr>
<td>Remote monitoring and diagnostics</td>
<td>38%</td>
<td>62%</td>
</tr>
</tbody>
</table>

The values above are a break down the percentage of responses for “prepared” vs. sum of “not prepared” and “somewhat prepared”

Source: IDC White Paper, Navigating the changing landscape of aftermarket and engineering services in the industrial equipment sector, sponsored by Genpact, September 2014

Figure 5
Partnersing with subject matter experts in analytics is seen as a key strategy.

What are the top three strategies you will use to help implement these initiatives during the next two years?

<table>
<thead>
<tr>
<th>Strategy</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hire resources for monitoring and process optimization</td>
<td>42%</td>
</tr>
<tr>
<td>Partner with a single vendor for process and analytics</td>
<td>36%</td>
</tr>
<tr>
<td>Buy and implement analytics tools and technologies</td>
<td>33%</td>
</tr>
<tr>
<td>Buy and implement different service lifecycle technologies</td>
<td>27%</td>
</tr>
<tr>
<td>Partner with an IT service provider</td>
<td>19%</td>
</tr>
</tbody>
</table>

*Respondents rated the top three strategies to implement the initiatives. Values above are based on the total number of responses for each strategy.

Source: IDC White Paper, Navigating the changing landscape of aftermarket and engineering services in the industrial equipment sector, sponsored by Genpact, September 2014

**Figure 6**

**Implementation strategies**

The success of a service-based business model for aftermarket services requires the seamless integration and optimization of people, process, and technology. Large organizations due to their size, may face challenges in implementing new initiatives since a deficit in knowledge in future technology is a hindrance. Leveraging partners who excel in these areas could bridge the knowledge gap and facilitate seamless integration. Our survey respondents indicated the same, with **42% of total respondents looking to hire resources for process monitoring and optimization, and 36% looking to partner with single-party external vendors for process and analytics support** (Figure 6).

**Conclusion**

Aftermarket services are on the verge of a major paradigm shift as companies move toward more service-based business models that are more viable in this economic environment. Data analytics is leading the transformation, since the data from critical assets provides companies more visibility and control over their operations.

The biggest challenge that aftermarket organizations face today is to be sure that data quality and subsequent analysis and reporting are scheduled and structured in a timely manner, so the results are a true representation of the equipment situation. The key outcome desired is to ensure that the majority of maintenance performed is reactive rather than proactive. This requires analytics’ Data-to-Insight to be
treated as a process that underpins the fabric of enterprise processes, such as field service, parts management, and so on.

Aftermarket services can enhance manufacturers’ competitiveness significantly if Data-to-Insight and Insight-to-Action processes are reimagined with technology and analytics solutions at their core. The following example of aftermarket service contract analytics illustrates how intelligent operations run by integrating process expertise with effective technology and Data-to-Action AnalyticsSM can improve products and processes (Figure 7).

Implementing Intelligent OperationsSM in aftermarket service contract analytics

Aftermarket service contract analytics: Data-to-ActionSM process

1. Identify target outcome revenue volatility, maintenance cost, unplanned downtime
   - Identify metrics: Data quality, cost estimates accuracy

2. Run Data-to-Insight
   - Master data preparation
   - Analysis of deviation
   - Domain driven identification of contextual root causes (e.g., material tagging)
   - Formalize hundreds of business rules to prevent incorrect inputs

3. Improve execution practices
   - Determine data entry error patterns
   - Implement industrial internet platform to flag future issues and enable continuous learning
   - Change management reduces systematic issues

4. Continuous learning
   - Suggest changes to data input to minimize error opportunities
   - Alter maintenance schedules
   - Modify confidence intervals for cost and revenue projections

Source: Genpact Data-to-Action AnalyticsSM loop, Genpact Research Institute

Figure 7
Click here to download the IDC White Paper

About Genpact

Genpact (NYSE: G) stands for “generating business impact.” We design, transform, and run intelligent business operations including those that are complex and specific to a set of chosen industries. The result is advanced operating models that support growth and manage cost, risk, and compliance across a range of functions such as finance and procurement, financial services account servicing, claims management, regulatory affairs, and industrial asset optimization. Our Smart Enterprise Processes (SEP℠) proprietary framework helps companies reimagine how they operate by integrating effective Systems of Engagement™, core IT, and Data-to-Action Analytics℠. Our hundreds of long-term clients include more than one-fourth of the Fortune Global 500. We have grown to over 68,000 people in 25 countries with key management and a corporate office in New York City. Behind our passion for process and operational excellence is the Lean and Six Sigma heritage of a former General Electric division that has served GE businesses for more than 16 years.

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