Reviewing Engineering News-Record's top 30 contractors

Getting ready for a new era of growth

January 2018
Reviewing Engineering News-Record’s top 30 contractors
Introducing *Engineering News-Record*’s (ENR) top 30 contractors

This is the third edition of our review of ENR’s top 30 contractors (the top 30 contractors). We note little change in the top 30 contractors, and Chinese contractors continue their dominance, as the top three contractors are all Chinese. The geographical distribution is shown below.

Source: EY

**Scope of our review**

The comparison of the top 30 contractors is based on their 2016 annual results (*in constant US$ 2014 exchange rates*), covering the following areas of performance and key performance indicators (KPIs):

**Financial performance**
- Revenue of 2016 vs. 2015 vs. 2014
- Net profit of 2016 vs. 2015 vs. 2014
- Net margin of 2016 vs. 2015 vs. 2014

**Financial position**
- Gearing ratio
- Net debt of EBITDA

**Diversification**
- Product/business unit diversification
- Geographical diversification
- Growth strategy

**Order book**
- Percentage change in order book
- Order book as a percentage of revenue

**Operational excellence**
- Average days outstanding
  - Receivables
  - Payables
  - Inventory
- R&D and selling, general and administrative (SGA) as a percentage of revenue
- Return on working capital, total assets and equity
- Revenue per employee and asset turnover

**Others**
- Tax rates
- Carbon emissions
Our study does not take into account private companies, companies that have not published a complete set of English financial statements, and those that are not subsidiaries of other ENR top 30 contractors. ENR’s 2016 Top 250 global contractors list, published in August 2016, was used as a reference. Our rankings are based on revenues converted into US$ 2014 constant exchange rates, against ENR’s list based on actual revenues from engineering and construction activities. Annual reports investigated either have a 30 September 2016, 31 December 2016, or 31 March 2017 year-end, depending on the fiscal year of the company under review.

Key figures

We summarize the performance of the top 30 contractors as follows.

<table>
<thead>
<tr>
<th>Top 30 key figures</th>
<th>FY16</th>
<th>FY15</th>
<th>FY14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenue (US$m)</td>
<td>775,301</td>
<td>752,533</td>
<td>725,914</td>
</tr>
<tr>
<td>International revenue as a percentage of total revenue – unweighted average</td>
<td>46.0%</td>
<td>46.0%</td>
<td>46.0%</td>
</tr>
<tr>
<td>Percentage revenue growth – weighted average</td>
<td>3.0%</td>
<td>3.7%</td>
<td>2.5%</td>
</tr>
<tr>
<td>Net profit (US$m)</td>
<td>20,420</td>
<td>20,111</td>
<td>18,808</td>
</tr>
<tr>
<td>Net profit as a percentage of sales – weighted average</td>
<td>2.6%</td>
<td>2.7%</td>
<td>2.6%</td>
</tr>
<tr>
<td>Net profit as a percentage of sales – unweighted average</td>
<td>2.2%</td>
<td>2.6%</td>
<td>2.4%</td>
</tr>
<tr>
<td>Percentage net profit growth – weighted average</td>
<td>1.50%</td>
<td>6.90%</td>
<td>9.20%</td>
</tr>
<tr>
<td>Order book (US$m)</td>
<td>1,624,931</td>
<td>1,498,873</td>
<td>1,478,865</td>
</tr>
<tr>
<td>Percentage order book change</td>
<td>8.4%</td>
<td>1.4%</td>
<td>8.2%</td>
</tr>
<tr>
<td>Order book as a percentage of annual sales for total top 30</td>
<td>209.6%</td>
<td>199.2%</td>
<td>203.7%</td>
</tr>
<tr>
<td>Gearing ratio – unweighted average</td>
<td>0.32</td>
<td>0.48</td>
<td>0.54</td>
</tr>
<tr>
<td>Gearing ratio – weighted average</td>
<td>0.35</td>
<td>0.50</td>
<td>0.62</td>
</tr>
<tr>
<td>Net debt to EBITDA – unweighted average</td>
<td>1.3</td>
<td>2.9</td>
<td>1.6</td>
</tr>
<tr>
<td>Net debt to EBITDA – weighted average</td>
<td>1.6</td>
<td>2.3</td>
<td>2.6</td>
</tr>
<tr>
<td>Asset turnover ratio</td>
<td>0.8</td>
<td>0.8</td>
<td>0.8</td>
</tr>
<tr>
<td>Return on total assets (net income/total assets)</td>
<td>2.0%</td>
<td>2.1%</td>
<td>2.1%</td>
</tr>
<tr>
<td>Return on equity (net income/equity)</td>
<td>10.6%</td>
<td>6.9%</td>
<td>8.6%</td>
</tr>
<tr>
<td>Return on working capital (operating income/working capital) – unweighted average</td>
<td>46.0%</td>
<td>47.0%</td>
<td>72.0%</td>
</tr>
<tr>
<td>SG&amp;A cost as a percentage of revenue – unweighted average</td>
<td>11.1%</td>
<td>9.8%</td>
<td>13.0%</td>
</tr>
<tr>
<td>Revenue per employee (US$m) – unweighted average</td>
<td>0.68</td>
<td>0.65</td>
<td>0.65</td>
</tr>
<tr>
<td>Revenue per employee (US$m) – weighted average</td>
<td>0.39</td>
<td>0.38</td>
<td>0.37</td>
</tr>
</tbody>
</table>

Source: EY
Executive summary

*ENR*'s top 30 contractors report total revenue of US$775b, nearly 10% of global construction output, deploy US$1t of assets and employ almost two million people. In FY16, their performance was better than FY15 and, in some aspects better, than FY14 as well. In FY16, combined revenue growth of the top 30 exceeded their income growth. Over the last three years, the revenue growth of the top 30 was on average 3%, slightly below the world economic growth figures as shown by the International Monetary Fund. However, the contractors with high exposure to the oil and gas markets continue to post lower growth.

The leading 10 contractors continued their dominance in FY16 as well, with little or no change in their rankings. The Chinese companies, China Railway Group, China Railway Construction Corp Ltd. and China Communications Construction Co., Ltd., remained at the top of list. Their continued lead in revenue growth was due to active international expansion and a rise in overseas order book due to the One Belt, One Road initiative and the “Go Out” policy. The country observed the onset of its 13th Five-Year Plan in 2016, which provides for a significant push toward the growth of the infrastructure sector within China. Chinese contractors are actively seeking to enter new markets by way of acquiring local players in other countries. As an example, China Communications Construction Company Ltd. aims to increase its overseas sales to 50% of total revenue by 2035, from the current 19%.

The average international revenue as a percentage of total revenue for the top 30 remained with 46% unchanged compared to prior years. South Korean contractors have been witnessing a steady drop in overseas orders. Their international orders were at a 10-year low in FY16 and a year-on-year drop of 39%, mainly because orders from their main international markets in the Middle East and Asia saw a downward trend. The South Korean Government is urging the players to develop new and lucrative business models to generate a positive growth from overseas construction orders in the future.

In addition to this, South Korean companies also have the longest cash conversion cycle of more than three months, which is much more than the average of the top 30 global players. International revenue of US-based contractors has also been declining. This is partly due to strong currency and low orders from some international markets.

The top 30 have been gradually reducing their debt levels and increasing their capital base, lowering their gearing ratio in FY16. Japanese contractors were the ones that reduced their debt levels most significantly. Nationwide, 58% of the listed companies in Japan became debt free by the end of 2016. Of these companies, construction players even witnessed a major increase in net cash. In our review, European contractors have also seen a reduction in their net debt over the years in our study.

Return on equity for the top 30 increased to 10.6% in FY16 from a marginal 6.9% in FY15. Return on total assets remained as low as 2%.

On average, it takes almost five months to get paid by a contractor. The full cash conversion cycle stands at a month’s time for revenues to convert to cash after paying creditors. European construction companies in the study have a negative cash conversion cycle. This implies that they collect outstanding receivables much earlier than they make payment to their creditors.

From an efficiency perspective, we note a return on working capital of 46%, which is consistent with FY15. Asset turnover stands at around 1 in all of the three years under review, confirming that the engineering and construction industry is very capital intensive.

From a technology perspective, all the top 30 have been quite actively deploying technologies, such as green concrete, lean construction, Building Information Modeling (BIM), drones, etc., to harness the benefits of operational efficiency and cost effectiveness. However, perhaps due to the already thin margins in the construction industry, technology investment remains, with the exception of the Chinese companies, well below 1% of total revenues. In fact, our review of the top 30 global contractors shows that US and European contractors spend close to .1% in contrast to Asian contractors, which spend well above 1%.

Employee productivity also remained low (on a weighted basis, less than US$ 400,000 per employee) when compared to other sectors, confirming the widespread message that, in the engineering and construction sector, productivity remains behind.

Other areas investigated reveal that effective tax rates remain high, standing on average at near nominal tax rates. Also, carbon emission rates are decreasing for almost all contractors that report this metric.

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2. China State Construction Engineering Corporation is actually number one on the ENR list but is omitted from our study as no full set of 2016 financial data was publicly available.
Key financials – revenue and profitability growth

The top 30 contractors witnessed a varying range of revenue growth in FY16. While some performed exceptionally well, others reported negative revenue growth.

About 50% of the contractors in the top 30 reported a decline in revenue in FY16, whereas 25% of the contractors also incurred a drop in profits.

• Chinese contractors mainly had single-digit revenue growth, ending their reign of meteoric growth.

• The historic fall in crude and oil prices hit some contractors with exposure to exploration and production of oil, leading to continued cancellation of orders.

• All four Japanese contractors in the top 30 experienced double-digit profit growth in the past two years.

• The only Indian contractor on the list observed both revenue and income growth in FY16.

• South Korean contractors witnessed the highest year-on-year average revenue growth (25%).

  • This was largely skewed by Samsung C&T, which executed a large scale merger in the second half of 2015

  • Excluding the effects of merger, the growth dropped to a mere 3%.

Fifteen contractors reported a decline in revenue growth. However, only 2 of these 15 contractors witnessed a drop in profit as well.

The above demonstrates tighter cost controls as well as the low interest rates in Europe and the US, contributing to better bottom-line growth.
### Key regional trends

<table>
<thead>
<tr>
<th>Region</th>
<th>Overview</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Europe</strong></td>
<td>Top-line growth of European contractors remained muted for the third year in a row. Some of them have been able to post higher returns enabled by overseas orders.</td>
</tr>
<tr>
<td><strong>Japan</strong></td>
<td>A booming residential market, mainly in Tokyo, led to collective growth for the contractors amid low labor cost increases. However, they anticipate labour costs to rise as the shortages intensify.</td>
</tr>
<tr>
<td><strong>South Korea</strong></td>
<td>Except for Samsung C&amp;T, which recently had a merger, leading to an exceptional revenue increase, the performance of South Korean players has been mixed. International orders were at a 10-year low.</td>
</tr>
<tr>
<td><strong>US</strong></td>
<td>Although growth shown by contractors was positive, it was at a lower level as compared to FY15. In FY15, an acquisition was made by Aecom, which led to an exceptional rise in revenue, making the overall growth higher.</td>
</tr>
<tr>
<td><strong>China</strong></td>
<td>Construction growth has slowed down in the country in line with GDP growth rate. However, with the onset of the 13th Five-Year Plan, combined with fiscal stimulus, the infrastructure sector is said to be poised for growth in the near future.</td>
</tr>
</tbody>
</table>
How will diversification help?

Most of the contractors are following the inorganic route to diversify and expand their operations. Some key objectives underlying acquisitions include:

- Expansion of geographic footprint
- Integration of supply chain, supplying customers the full spectrum of services – design, construction and maintenance
- Deploying technological advancement to develop new capabilities

China Communications Construction Co., Ltd. aims to increase its overseas revenue to 50% of total revenue by 2035 – mergers and acquisitions is one of its key strategies to achieve the target. A major European contractor, Technip, merged with US-based FMC Technologies to form an integrated company providing services across the value chain.

The South Korean and US-based contractors continue to face a decline in overseas revenue. The South Korean contractors reported the lowest amount of international orders in the last 10 years and a 39% decline year-on-year in 2016.

Drop in overseas orders – South Korean contractors

2014  |  2015  |  2016
US$66.00b  |  US$46.10b  |  US$28.19b
30%  |  39%  |

Source: EY

US-based contractors continued to witness decline in international revenue in FY16, for the third year in a row. One of the major reasons for a decrease in overseas revenue in during the year was the strengthening of the US dollar against other major currencies. US contractors also faced a drop in orders from other regions due to a fall in capital project spending in some European, Middle Eastern and African countries and decreased liquid natural gas activity for CB&I from its operations in Asia-Pacific and Colombia. Fluor Corp. reported a major year-on-year drop in revenue from the Central and South America segment (61%) mainly due to no new orders from the region.

International revenue as a percentage of total revenue: US-based contractors in the top 30

<table>
<thead>
<tr>
<th>Contractor 1</th>
<th>Contractor 2</th>
<th>Contractor 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>65.3%</td>
<td>56.6%</td>
<td>48.0%</td>
</tr>
<tr>
<td>56.0%</td>
<td>41.0%</td>
<td>29.9%</td>
</tr>
<tr>
<td>48.5%</td>
<td>27.8%</td>
<td>16.4%</td>
</tr>
<tr>
<td>48.5%</td>
<td>27.8%</td>
<td>16.4%</td>
</tr>
</tbody>
</table>

Source: EY


7 Annual reports and EY analysis.
The map below showcases the regions that are witnessing an increase or a decrease in overseas orders. The UK and certain parts of Europe and the emerging markets of India and China are on the increasing trajectory, whereas the US and South Korea are witnessing a drop in international revenues.

**Debt position of the top 30 contractors**

The overall unweighted average gearing of the top 30 contractors combined has reduced from a 0.54x level in FY14 to 0.48x in FY15 and to 0.32x in FY16.

In the last three years, France-based Eiffage had the highest debt component, with as much as three times net debt to equity, and, in contrast, another French contractor, Technip, had a net cash position (cash more than total borrowings).

All four Japanese contractors lie in the Middle 10 (see chart on next page), and they were able to reduce overall debt levels. A record number of Japanese companies became debt free by the end of fiscal 2016, largely due to an improvement in their earnings, which were used to pay off debts. Of these companies, construction players witnessed a major increase in net cash. In addition to lowering interest-bearing debt, Japanese contractors have plans to invest surplus cash in seizing M&A opportunities, as well as in research and development in construction technologies. As an example,
Shimizu Corp. has made an investment in a Silicon Valley venture fund to have an access to innovations that would help it overcome the labor shortage problem in Japan.  

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*The top, middle and bottom 10 are based on FY16 revenue ranking.

The unweighted average net debt to EBITDA ratio of the top 30 remained almost the same in FY16 (1.3) as it was in FY14 (1.6). However, the level dropped from a high of 2.9 in FY15. The drop in FY16 was mainly due to an increase (7%) in combined EBITDA of the top 30 contractors and a drop in net debt level (23%) as well. The combined EBITDA of all of the contractors witnessed a slight decline of 1% in FY15. Only two companies in the top 30 had negative EBITDA in FY16; the rest all had positive EBITDA.

Our analysis indicates an increase of 130 basis points in the average selling, general and administrative (SG&A) expenses (as a percentage of total revenues) of the top 30 contractors in FY16. This is in contrast to an overall average decrease of the leading contractors observed in FY15 over the previous year. Although the contractors appear increasingly cost conscious, expenses increased in FY16 due to an acquisition by a European contractor, which led to an exceptional rise in its SG&A expenses, affecting the overall average, from 9.8% in FY15 to 11.1% in FY16.

**Efficiency**

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European companies have the highest SG&A expenses as a percentage of revenues. This is most likely because of the high personnel costs most of the European companies have as compared to their counterparts in other regions.

Since we started our analysis of the leading contractors in 2015, Japanese and South Korean contractors have maintained not only a prudent selling expense ratio but also the highest revenue per employee. Per million US$ of revenue, the contractors of these regions have a lower number of employees compared to their European and Chinese counterparts. The high ratio is most likely due to the skilled labor shortage that the companies face. The long working hours, which are an inherent way of working in the country, are likely a factor behind the high revenue per employee ratio.

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**SG&A expenses as a percentage of revenues; by region**

<table>
<thead>
<tr>
<th>By region</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Europe</td>
<td>21%</td>
<td>18%</td>
<td>22%</td>
</tr>
<tr>
<td>Japan</td>
<td>5%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>South Korea</td>
<td>9%</td>
<td>6%</td>
<td>6%</td>
</tr>
<tr>
<td>China</td>
<td>4%</td>
<td>5%</td>
<td>5%</td>
</tr>
<tr>
<td>United States</td>
<td>1.8%</td>
<td>1.7%</td>
<td>1.7%</td>
</tr>
</tbody>
</table>

Source: EY

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8 | Reviewing Engineering News-Record's top 30 contractors
The unweighted average revenue per employee increased in FY16 (0.68) from a constant level over the past two years (0.65). The only contractor, apart from the Japanese and the Korean contractors, that comes close to the average rate is a US-based contractor. Perhaps more relevant, therefore, is to look at the weighted average revenue per employee. This shows a stunning figure as low as 0.39 (FY15 and FY14: 0.38). This would rank the contractor at 11th place on the list of 13 sectors published by CSIMarkets, with only the sectors Consumer Discretionary, Capital Goods and Transportation performing worse. This confirms the low productivity in the sector mentioned everywhere.

Asset turnover remains flat at around a factor of 0.8, implying that total revenue for the top 30 contractors almost equals the total amount of assets. We, however, do note substantial regional differences between Asia-Pacific companies and US and European companies, as shown below.

<table>
<thead>
<tr>
<th>Region</th>
<th>Average asset turnover ratio (FY16)</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>0.69</td>
</tr>
<tr>
<td>Korea</td>
<td>0.87</td>
</tr>
<tr>
<td>Japan</td>
<td>0.91</td>
</tr>
<tr>
<td>India</td>
<td>0.52</td>
</tr>
<tr>
<td>Europe</td>
<td>0.98</td>
</tr>
<tr>
<td>US</td>
<td>1.59</td>
</tr>
</tbody>
</table>

Source: EY

US-based contractors have the highest asset turnover ratio, implying that their assets are relatively more efficient to generate revenue as compared to contractors in other regions.

Working capital, returns on equity position and returns on total assets

The overall average receivable days of the top 30 global contractors in FY16 is shorter than the payable days. The average receivable days is 90, whereas, excluding two outliers, the average payable days is 110. However, about one-third of the contractors pay their creditors before they receive payment from their debtors. The majority of these are Japan- and South Korea-based contractors. They continue to face a working capital management situation that is significantly worse than the average.

33% of contractors have a negative cash conversion ratio in FY16

70% of those are Asian contractors

Average cash conversion days FY14–FY16

Source: EY

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South Korean companies have the highest cash conversion cycle of more than three months. They are followed by the Japanese at about a month and a half.

Chinese companies have high payable days, which makes the situation favorable as they pay their creditors much later and receive cash from the debtors much earlier.

The three year average for European companies is very encouraging. They have a negative cash conversion cycle, implying they generate revenue from customers before they pay their creditors.

The average cash operating cycle for US-based contractors is one month, which is the same as the average of all of the top 30 contractors combined for the three years under study.
European and Chinese contractors have been managing their cash conversion cycles relatively better than their counterparts. Three of the four China-based contractors, however, have above-average unbilled work in progress as a percentage of revenue primarily due to a high amount of properties under development. The same is the case with Japanese contractors as even they have high exposure in the residential building segment. The only Indian contractor that has made the top 30 list for the first time is in a favorable working capital position.

The average returns on working capital (operating income divided by working capital) of the top 30 have reduced from 72% (FY14) to about 46% (FY16). The drop has mainly been due to:

- An increase in the number of contractors with negative working capital
- A drop in the combined operating income of the top 30 contractors

Returns on equity stayed in the 6-9% range over the three year period of FY14 – FY16 for the top 30. This range excludes the exceptional return posted by European contractor, NCC in FY16, which took the average for the year to 10.6%. About 33% (or 10) of the contractors had above-average returns, and, of those 10, six also had the highest return on working capital. The four Japanese companies are in that group.

Focus on Japanese working capital management

Above-average returns

All the Japanese contractors

Increase in assets

The Japanese contractors have shown an increasing trend over past years

30% working capital increase

Combined growth of the Japanese contractors in FY16

Returns on total assets stand at around 2% on a weighted basis but vary significantly across the continents. Also, a higher asset turnover does not always yield a higher return on net assets, as the comparison for FY16 shows below:

Asset turnover vs. return on total assets for 2016

Source: EY
Order backlog

The combined order backlog of the top 30 contractors shows a year-on-year increase of 8% to US$1.6t in FY16, representing nearly 210% of annual sales. The major contributors to this growth were the China-based companies that largely benefitted from the One Belt, One Road (OBOR) initiative and the “Go Out” policy. In FY16, China’s MCC and Japan’s Kajima did not report their order backlog numbers presumably as these two contractors do not report under IFRS.

China (three contractors)

Average year-on-year change in order book in FY14-16

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY14</td>
<td>6.5%</td>
</tr>
<tr>
<td>FY15</td>
<td>2.9%</td>
</tr>
<tr>
<td>FY16</td>
<td>16.4%</td>
</tr>
</tbody>
</table>

The OBOR initiative offers Chinese contractors a favorable platform to expand overseas. In 2016, the Chinese contractors signed over 8,000 new overseas contracts in the countries along the OBOR routes. The total contract value grew 36% year-on-year to US$126b, accounting for more than 52% of China’s total overseas projects. This has significantly contributed to the rise in the average percentage change in order book for Chinese contractors to 16.4% in FY16 from 6.5% in FY14.

Japan (three contractors)

Average year-on-year change in order book in FY14-16

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY14</td>
<td>-5.3%</td>
</tr>
<tr>
<td>FY15</td>
<td>5.1%</td>
</tr>
<tr>
<td>FY16</td>
<td>8.6%</td>
</tr>
</tbody>
</table>

Japanese government announced a stimulus package of US$266b in 2016, with approximately US$60b set aside for infrastructure development. Rising construction activity in the country in preparation for Olympics 2020 has led to an increase in average order book sizes of major construction players.

South Korea (five contractors)

Average year-on-year change in order book in FY14-16

<table>
<thead>
<tr>
<th>Year</th>
<th>Percentage Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>FY14</td>
<td>8.7%</td>
</tr>
<tr>
<td>FY15</td>
<td>5.7%</td>
</tr>
<tr>
<td>FY16</td>
<td>-2.5%</td>
</tr>
</tbody>
</table>

Contractors witnessed negative growth in average order book size in 2016 amidst declining overseas construction orders, partly due to low global oil prices resulting in a drop in orders from countries in the Middle East. The South Korean construction sector is currently undergoing deterioration post-boom since 2013. Additionally, public infrastructure spending declined 4% year-on-year in 2016, further impacting the order book.

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11 Japan Infrastructure and Construction Industry forecast report 4QFY16, BMI.
The US (three contractors)

Average year-on-year change in order book in FY14-16

- 27.4%
- 17.2%
- -6.2%

FY14 FY15 FY16

The average change in order book in FY16 for the US contractors declined to a negative 6.2% from 17.2% in FY15. The primary reason for the decline over the three year period is the significant decline in backlog reported by CB&I, due to the impact of lower oil and gas prices, reducing orders in the sector.

Excluding CB&I, the reported backlog at the end of FY16 was the same as in FY15. However, over the three-year period, the backlog for all US contractors was up 8.5%. AECOM’s increased backlog due to its merger with URS more than offset CB&I’s decline.

Average order book size (in months)

In FY16, the lowest and highest order book size were at a stark contrast – both the lowest and the highest positions were held by European contractors. The lowest was a French contractor who had nine months in backlog, indicating that it would need to secure new contracts to maintain a constant level of annual revenue. Toward the high side is Italy’s Salini, with an order book that provides about 70% of revenue and 80% of EBITDA for the next four years. The overwhelming backlog by this contractor was due to an acquisition it made at the start of 2016. Over 60% of its backlog was high-speed/capacity construction projects.

Average backlog in months FY14-FY16, by region

<table>
<thead>
<tr>
<th>Region</th>
<th>FY14</th>
<th>FY15</th>
<th>FY16</th>
</tr>
</thead>
<tbody>
<tr>
<td>Korea</td>
<td>50</td>
<td>41</td>
<td>36</td>
</tr>
<tr>
<td>China</td>
<td>33</td>
<td>33</td>
<td>35</td>
</tr>
<tr>
<td>The US</td>
<td>31</td>
<td>28</td>
<td>26</td>
</tr>
<tr>
<td>Average</td>
<td>29</td>
<td>26</td>
<td>26</td>
</tr>
<tr>
<td>Europe</td>
<td>24</td>
<td>22</td>
<td>22</td>
</tr>
<tr>
<td>Japan</td>
<td>12</td>
<td>12</td>
<td>14</td>
</tr>
</tbody>
</table>

Source: EY

China, Korea and the US consistently maintained their order books higher or equal to than the average order book as a percentage of the top 28 global contractors (two contractors do not report their backlog) for the three years. While the global average has declined during FY14 through FY16, Japan witnessed a marginal rise in its order book size during the period.
Environmental

The contractors are gradually becoming conscious of their carbon emissions and are striving to achieve a lower rate of emission every passing year.

The Europe-based contractors follow the Greenhouse Protocol in reporting their emissions and have observed a drop in their carbon intensity over the years. The table to the right depicts the ratio for some of them.

Rising awareness and concern for sustainable business practices has led to a paradigm shift in the construction sector. Contractors are becoming increasingly environment conscious, realizing the need to have better alternatives for carbon-emitting products.

There is a focus on greener and cleaner concrete. GS E&C has developed “green concrete,” which has led to a total reduction of GHG emissions by 45,000 tons. Another observed an 80% reduction in CO emissions during its concrete production stage using CleanCrete.

Royal BAM is reducing the emissions from its asphalt plants by producing more low energy asphalt (LEA). The LEA production process results in approximately 30% lower environmental costs than conventional asphalt.

Contractors have also formed partnerships with research institutes to help them gain a better understanding of new technologies and how they can be used to reduce emissions in the construction phase or gauge new energy-saving options.

### As reported total carbon intensity ratio:

**Total GHG emissions/revenue (local currency minimum)**

<table>
<thead>
<tr>
<th>Company</th>
<th>FY16</th>
<th>FY15</th>
<th>FY14</th>
</tr>
</thead>
<tbody>
<tr>
<td>Vinci</td>
<td>58.7</td>
<td>59.3</td>
<td>61.0</td>
</tr>
<tr>
<td>Grupo ACS</td>
<td>225.0</td>
<td>272.0</td>
<td>487.0</td>
</tr>
<tr>
<td>Bouygues</td>
<td>510.0</td>
<td>514.0</td>
<td>534.0</td>
</tr>
<tr>
<td>Royal BAM</td>
<td>29.1</td>
<td>30.9</td>
<td>33.0</td>
</tr>
<tr>
<td>Salini</td>
<td>115.0</td>
<td>140.0</td>
<td>–</td>
</tr>
<tr>
<td>NCC</td>
<td>5.0</td>
<td>5.9</td>
<td>5.8</td>
</tr>
<tr>
<td>Balfour Beatty</td>
<td>30.1</td>
<td>35.2</td>
<td>30.2</td>
</tr>
</tbody>
</table>

Source: EY
Innovation

The construction industry has seen a slow yet thorough shift of attitude in adoption of technology. While the industry as a whole is known as a slow adapter of technology, leading contractors are realizing the benefits of using available technologies and are gradually developing a culture of innovation in their enterprise.

China-based contractors continue to have the highest R&D spend as a percentage of revenue. All four Chinese contractors in the top 30 analysis spend at least 1.5% of their revenue on research and development activities. Coming a close second with more than 1% of the ratio is a European contractor, Technip, which recently merged with an American technology company, FMC Technologies. However, the vast majority of European companies spend close to 0.1% of turnover on R&D, significantly below their Asian competitors.

The Japanese, who are known for their high R&D culture, fall next to the Chinese contractors, with all of them reporting at least 0.5% of their revenue on research activities. The European and other Western contractors continue to lie at the lower end of the spectrum, although they are reporting the use of new-age technologies, such as drones, BIM, IoT, lean construction, etc.

US-based Fluor Corporation has built up an internal team of experts to advise its client on the use of cleaner concrete at an early planning stage. It is also developing a data-based foundation and creating business cases for greater use of innovation (such as 50% faster-curing concrete) in the market. Most European contractors do not spend more than 0.2% of sales on R&D.

Sweden’s Skanska has developed a new construction concept known as “flying factories.” The concept has been developed to save costs and apply lean manufacturing techniques. The contractor deploys temporary factories close to the construction sites and employs local semiskilled labor. It has reaped a reduction in construction time of up to 65%, a major drop in labor costs and a 44% improvement in productivity relative to on-site assembly. The contractor is also developing a “tag and track” system, which uses radio frequency identification (RFID) tags and barcodes on products and components used in construction projects.

Effective tax rates

Almost 50% of the top 30 contractors have a higher effective tax rate than the nominal rate. Not surprisingly, contractors are not widely mentioned in the Paradise Papers. Out of the five South Korean contractors, two reported losses for FY16 and the remaining three’s effective tax rate was at least 100% of the nominal tax rate.

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14. Ibid.
Final remarks

The global construction industry is forecast to grow at a rate of 2.7% in 2017 and increasing to 3.5%\(^\text{15}\) in 2018, making it an almost US$10t industry. Rising urbanization, the demand for housing and the cyclical recovery of the global economy put the construction industry in a good spot. Aging infrastructure in the developed markets poses a huge infrastructure opportunity for contractors. The construction market in Europe, primarily driven by residential demand, is also rebounding after years of slump. Digitization and green construction are other areas of growth outliers for leading contractors.\(^\text{16}\)

While the opportunities are plenty, so are the challenges. Uncertainty of Brexit looming over Britain, the potential for increased trade tariffs by the US Government, aging of the Japanese and US labor force, and budget deficits keeping government spending low in some developed nations are all major risks that could hamper global construction output. In addition to these challenges, the sector is still plagued with over-budgeted projects, late deliveries and low productivity. All these challenges may not be under the control of the contractors, but some of them can be overcome by the adoption of technology. All the leading contractors are deploying technologies in one way or the other, but their spending on research and development is still very low as compared to other industries. And, the smaller contractors are apprehensive to use the technologies as they are skeptical to spend and are wary that by the time they adopt something, the technology might be already redundant.

Such times call for a need for more alliances to raise awareness, improve efficiencies and reduce risk within the industry.

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\(^\text{16}\) Ibid.
EY contacts

Mark Grinis
Global Real Estate, Hospitality and Construction Sector Leader
Ernst & Young LLP
mark.grinis@ey.com

Ad Buisman
Global Engineering and Construction Leader
Ernst & Young Accountants LLP
ad.buisman@nl.ey.com

Linda Shen
China Engineering and Construction Leader
Ernst & Young Hua Ming LLP
linda.shen@cn.ey.com

Paul Gerber
France Engineering and Construction Co-Leader
E&Y et Associes
paul.gerber@fr.ey.com

Sylvain Perdriau
France Engineering and Construction Co-Leader
E&Y et Associes
sylvain.perdriau@frcey.com

Satoshi Abe
Japan Engineering and Construction Leader
Ernst & Young ShinNihon LLC
satoshi.abe@jp.ey.com

Han Shin Nae
Korea Engineering and Construction Leader
Ernst & Young Advisory, Inc.
hanshin.nae@kr.ey.com

Bert Bardoel
Oceania Engineering and Construction Leader
Ernst & Young
bert.bardoel@au.ey.com

Francisco Fernandez Romero
Spain Engineering and Construction Leader
Ernst & Young, S.L.
francisco.fernandezromero@es.ey.com

Jonas Svensson
Nordics Engineering and Construction Leader
Ernst & Young AB
jonas.svensson@se.ey.com

Adrian Mulea
UK & Ireland Engineering and Construction Leader
Ernst & Young LLP
a.mulea@uk.ey.com

Erin Roberts
US Engineering and Construction Leader
Ernst & Young LLP
erin.roberts@ey.com