Executive Insights

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Advanced Analytics: The Opportunity That Industrial Businesses Can't Afford to Miss

Advanced analytics is no longer a strategic opportunity that only the most innovative and well-resourced industrial companies can leverage — it's now within reach of all those with the foresight to take advantage. Those who don't grasp its promise with both hands risk being left behind in the next wave of growth.

The availability of increasingly sophisticated data analysis tools and ever more computing power means that organizations of all types and sizes should examine how they can enhance their business by leveraging their data and these new analytical possibilities. However, unleashing the strategic benefits of advanced analytics is not without its challenges.

Advanced analytics – why now?

The market for data analytics is experiencing significant global growth. Analyst IDC projects that the industry will be worth $151 billion in 2017, representing a 12.4% annual increase since 2016, and that it will see a compound annual growth rate of 11.9% to 2020, when it will be valued at over $210 billion. Much of that growth will be in industrial sectors, driven by three core catalysts (see Figure 1).

First is the digitization of the vast amount of data that industrial organizations can generate and access. Rich internal data sets include transaction and sales information, customer and supply chain records, product and project databases, production and labor statistics, and data from motion, heat, pressure and geolocation sensors. External data sets include government information, third-party transactions, demographics and reviews of their own or competitors' products.

The second factor is the acceleration in available computing power. Not only are storage capacity and processing power continuing to increase — and become cheaper — there are also innovations such as the emergence of massively parallel processing, which enables more efficient and faster database analysis, and the availability of storage-enhancing in-memory computing. Advances in artificial intelligence (e.g., machine learning algorithms) are also enabling machines to perform analysis in new and powerful ways with significantly reduced need for human input or intervention.

Finally, a new generation of software tools is facilitating large-scale data analysis at a speed and level of usability that only a few years ago was unthinkable. Examples include the processing capability of Alteryx, Exasol and R, and the insightful data visualization of products such as Carto and Tableau.

Industrials leading the way in data analytics

Large industrial companies, particularly those with a large installed base of equipment, distributed sales, and fulfillment networks or fragmented customer bases, create huge volumes of data. A number have already applied advanced analytics to their financial, commercial, operational and organizational data sets in the search for competitive advantage.

Advanced Analytics: The Opportunity That Industrial Businesses Can't Afford to Miss was written by **Tom Diplock**, Partner, **Peter Walter**, Managing Director and **Harpreet Singh**, a Manager. Tom and Harpreet are based in London and Peter is based in New York.

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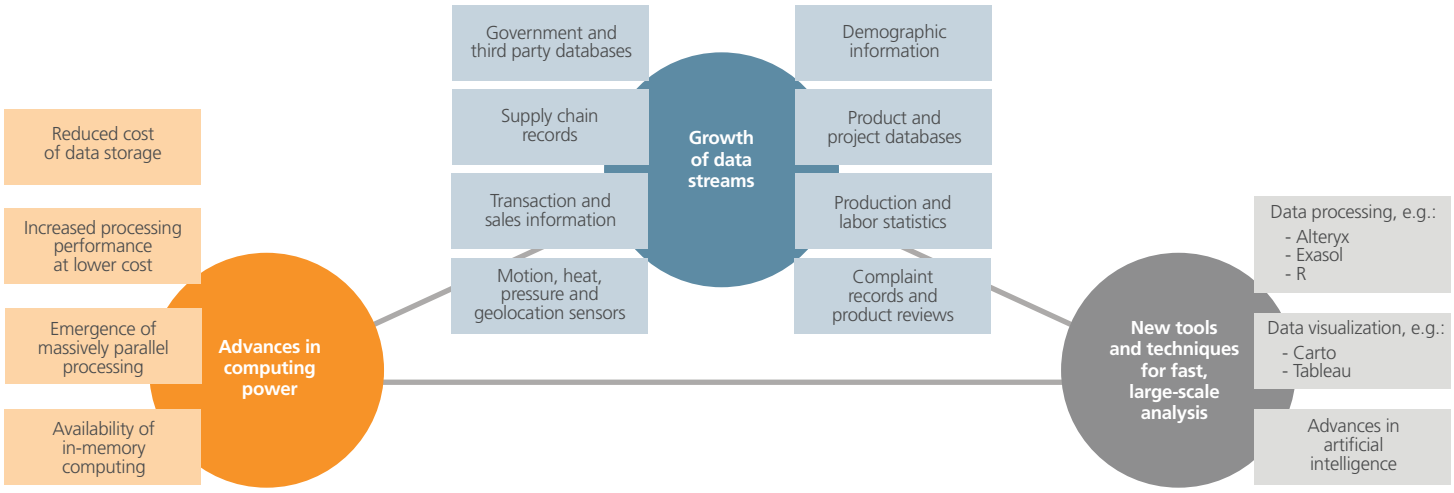
Figure 1
Catalysts of advanced analytics growth in industrials



Source: L.E.K. analysis

The benefits of better and faster decision-making, improved revenue growth and better profitability are being enjoyed by a number of world-class players. Each of Boeing's aircrafts, for instance, have over 10,000 sensors to capture massive amounts of real-time data. This information enables the company's airline customers to optimize their flight paths, minimizing downtime by predicting maintenance needs and maximizing revenue by ensuring fuel efficiency. Construction machinery manufacturer Caterpillar installs sensors and other monitoring equipment in its vehicles. The data is sold to customers as a service called Cat Connect, which allows them to monitor vehicle performance and predict maintenance needs. Such data-driven services provide a recurring revenue stream for Caterpillar and strengthen its customer relationships.

Businesses of all sizes can leverage the internal and external data available to them, and seizing the opportunity is an increasingly important factor in maintaining competitive advantage. In L.E.K. Consulting's experience, most industrial companies can do this in three areas: diagnosing business performance, enhancing their commercial proposition and improving their operational fulfillment (see Figure 2).

1. Diagnosing business performance

By generating enhanced insights into their business performance, companies can make better and faster decisions with increased confidence. L.E.K. recently helped a construction client better understand its sources of margin leakage by analyzing the millions of data points in its project database. In just a few days, the business was able to identify the drivers of profitability at a very granular level and take specific strategic actions, including focusing bidding efforts on projects more likely to yield profit and addressing business unit capability gaps.

2. Commercial proposition

Industrial companies can use advanced analytics to review and optimize their product portfolios and their pricing and channel strategies. For a roofing distributor, L.E.K. helped identify the optimal size and locations of its branch network. This involved reviewing large internal data sets, such as the financial database containing branch-level rental rates, and external data sets, including geospatial data on competitor locations and census-based market information. As a result, the company was able to estimate local-level market sizes and identify optimal locations to capture maximum customer demand.

Figure 2
Areas of benefit for advanced analytics

Advanced analytics-based capabilities for industrial businesses

1 Diagnosing business performance
(Rapid and insightful customer segmentation and business performance diagnosis using detailed sales / transactions / project databases)

2 Commercial proposition	3 Operational improvements
Channel optimization: Network + sales force	Inventory / logistics optimization
Product optimization: Range + SKU	Manufacturing / sourcing optimization
Pricing optimization	Workforce optimization

Source: L.E.K. analysis

3. Operational improvements

Data analytics can enable organizations to improve their operations across manufacturing, inventory, logistics and human resources. L.E.K. worked with a large industrial contractor whose workforce had a highly specialized skill base that was both scarce and subject to cyclical demand. To enable the company to manage its labor supply efficiently, L.E.K. analyzed internal HR data to define existing skill pools along with assumptions about key dimensions such as recruitment, progression, attrition, retirement and redundancy. The resulting cohort model enabled L.E.K.'s client to develop resourcing plans that meet alternative future demand scenarios, and refresh this analysis in real time.

Obstacles to capitalizing on advanced analytics

The rationale for developing an advanced analytics strategy is clear, but the practice of developing and implementing the required tools, methodology and cultural change is less simple.

One of the most common challenges organizations face is knowing where to start due to the massive amount of data available. Many companies fail to develop a deep understanding of the seemingly limitless range of business use cases and potential outcomes, and initially respond by trying to mine too many information sources, generating an ocean of data with no clear objective.

Allied to this is the difficulty of developing a systematic approach to defining the organization's data and analytics journey and how it should be organized, managed and prioritized. Such complex initiatives tend to require significant internal change, which often causes friction with employees at many levels across the organization; they might feel threatened or resentful of the need to adjust legacy systems and decision support tools, and frustrated by the associated disruption.

It is also likely that the organization will not have the right skills in place to leverage its data effectively, so it will need to build the relevant capabilities through internal training and external hires, which can be expensive, as the best talent is in high demand.

Getting an advanced analytics strategy right

These challenges are not insurmountable. To create the right advanced analytics strategy, four key building blocks are needed.

1. Define goals, assets and constraints

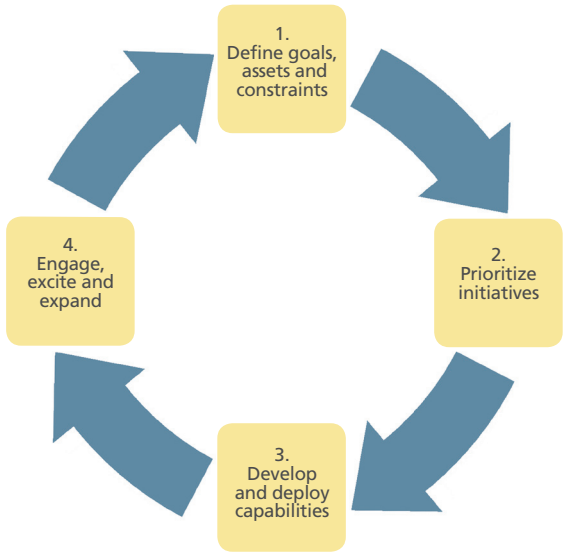
- Identify the principal commercial issues for your business. These will direct which data sources to target and the type of analysis required. The issues should concern the fundamental aspects of performance: revenue, cost, profit margin and operational capability.
- Detail the key questions associated with each of these drivers of business performance. These may include:

  Which areas of the business are performing better / worse than others?

  What are the key sources of revenue / margin leakage in the business?

  What are the drivers of good/bad financial and operational performance?
- Identify the internal and external data to which you have access — and its quality — and how it will help in answering these questions.
- Assess the main barriers to successfully deploying advanced analytics in terms of data, resources, skills and culture.

Figure 3
The four components of an advanced analytics strategy



Source: L.E.K. analysis

2. Prioritize initiatives

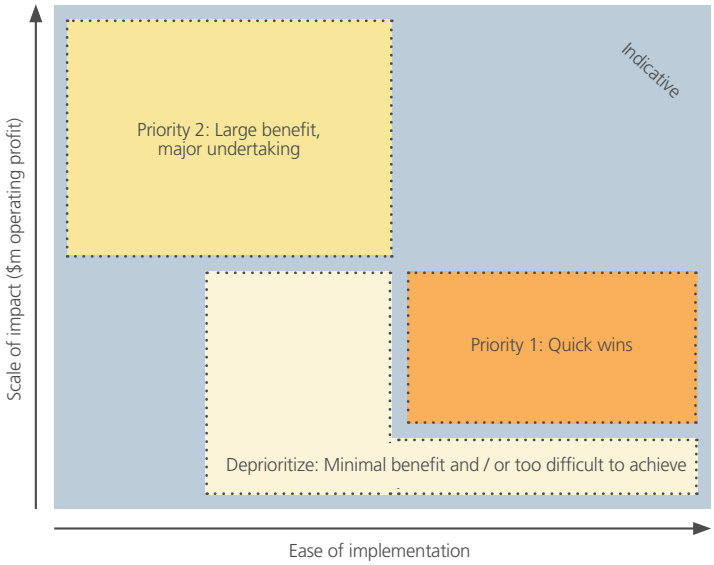
- Identify the initiatives that, enabled by advanced analytics, will address the questions and challenges outlined at stage 1.
- Assess the scale of benefit achieved by addressing each commercial issue, and determine the scale of challenge required to achieve these goals.

Undertake a prioritization analysis (see Figure 4), targeting quick wins to build momentum before addressing the major high-value programs. Initiatives falling outside these two categories should be held until either they become more critical and therefore of higher value to the business, or implementation improvements reduce difficulty and enable more to be captured in the quick wins category.

3. Develop and deploy capabilities

- Address capability barriers to success, developing detailed plans for training, external resourcing, tools and methodologies.

Figure 4
Prioritization matrix



Source: L.E.K. analysis

- Address organizational barriers and ensure buy-in from major business divisions.
- Create benefits-oriented key performance indicators to enable measurement and celebration of success

4. Engage, excite and expand

- Target quick wins to build early excitement about the potential of advanced analytics, "winning the hearts and minds" of organizational leaders.
- Leverage lessons from failures — there will be some — to inform future initiatives.
- Expand from quick wins on short-term projects to build momentum and target higher-value prizes.

Advanced analytics offers significant benefits for all types of industrial companies. It can be a daunting journey with plenty of barriers, but that should not be an excuse for kicking the matter into the long grass. The reality is that this is the era of the data analytics arms race — industrial organizations simply cannot afford to miss the opportunity in front of them.

About the Authors:

Tom Diplock is a Partner in L.E.K. Consulting's London office. His primary focus is in industrial sectors. He advises clients on a range of critical issues including strategy development, commercial and financial diagnostics, and performance improvement, and has significant experience in both buy and sell side commercial due diligence.

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About L.E.K. Consulting

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