ANALYTICS IN THE AGE OF IOT: TODAY'S DATA-DRIVEN COMPETITIVE EDGE

Report Highlights

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Underutilization of machine-generated data is the top driver behind today's IoT technology initiatives.

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65% of Best-in-Class companies have policies in place to support data governance.

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Best-in-Class companies are more than twice as likely to have a dedicated IoT software platform.

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Best-in-Class companies saw a 15% year-over-year reduction in operating cost.

The exabytes of data spewed out by industrial machines, sensors, and mobile devices in today's Internet of Things (IoT) present a significant challenge for those tasked with capturing and managing it, but also an enticing opportunity for decision makers monitoring these environments. This report explores a Best-in-Class approach to IoT analytics and seeks to understand the performance impact of a dedicated IoT strategy.
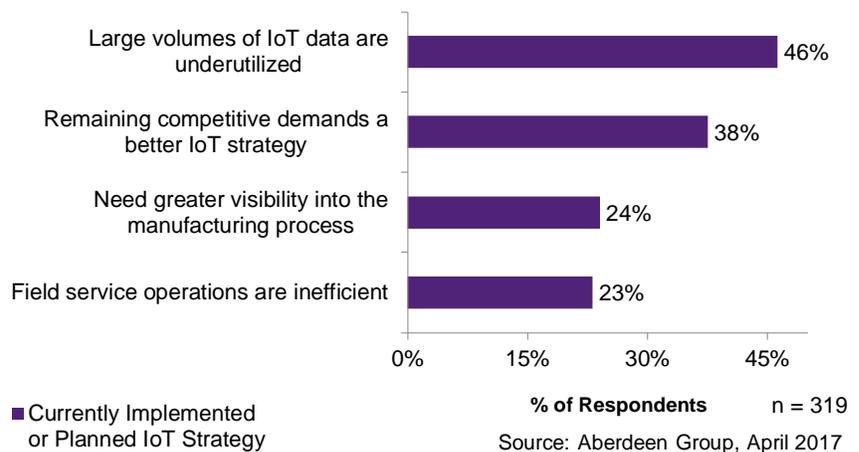
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> **In the same way that the growth in traditional application data evolved from corporate-mandated problem to data-driven opportunity, IoT data has become the new frontier of actionable insight.**

A River of Potential Insight

Streams of data from IoT sources have become more prevalent in today's rapidly-evolving business environment. Once largely confined to the more sophisticated manufacturing equipment of yesteryear, potentially useful IoT data is cropping up in a number of industries and use cases — from traffic and weather data in public sector environments to product and asset-tracking RFID sensors in the retail and CPG sectors.

In the same way that the growth in traditional application data evolved from corporate-mandated problem to data-driven opportunity, IoT data has become the new frontier of actionable insight. According to Aberdeen's research, the most commonly cited driver of investment in IoT technology has more to do with missed opportunity than with bolstering IT infrastructure (Figure 1).

Figure 1: Why Invest in IoT Technology and Infrastructure?

Large volumes of IoT data are underutilized	46%
Remaining competitive demands a better IoT strategy	38%
Need greater visibility into the manufacturing process	24%
Field service operations are inefficient	23%

0%   15%   30%   45%

■ Currently Implemented or Planned IoT Strategy

% of Respondents   n = 319

Source: Aberdeen Group, April 2017

Under-utilization of data is increasingly top of mind for IT managers and business leaders alike as they strive to make their organizations more data-driven. Because of the nature of IoT data as an automated, ceaseless stream of information, the challenge

Definitions:

In the context of this research, the **Internet of Things (IoT)** refers to a network of connected machines, sensors, mobile phones, and other devices that generate frequent and automated streams of data.

This report draws on findings from Aberdeen's recent IoT Advantage survey and focuses primarily on **319 organizations** with a current or planned IoT initiative.

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Aberdeen's Maturity Class Framework

Aberdeen's research defines Best-in-Class performance by benchmarking organizations against several key performance metrics. Measuring each organization against these metrics allows for a breakdown into three maturity classes, as described below:

- **Best-in-Class**: Top 20% of performers
- **Industry Average**: Middle 50% of performers
- **Laggard:** Bottom 30% of performers

of capturing and exploiting that data is elevated. However, that challenge doesn't deter most IoT-relevant organizations these days, as they typically view their IoT strategy as a critical piece of the puzzle in keeping pace with the competition. Other drivers relate more specifically to certain use cases of IoT technology (e.g., manufacturing and field service environments), but the objective of capturing and utilizing more IoT data for decision support knows no job function or industry boundaries.

The Top Gun of IoT: Defining the Best-in-Class

Because of its relative nascence, measuring success with IoT analytics is somewhat difficult to define. However, based on findings from Aberdeen's recent IoT survey, Best-in-Class companies (see sidebar) were determined by their ability to perform against the following metrics:

➔ **Data efficiency and decision speed.** 89% of Best-in-Class companies reported an "improvement" or "significant improvement" in decision-making speed, compared with 70% of Average companies and only 2% of Laggards.

➔ **Increased Productivity.** Best-in-Class companies saw a 17% year-over-year increase in asset uptime/utilization, compared with a 4% increase for the Industry Average, and no improvement for Laggards.

➔ **Operational Performance.** The Best-in-Class experienced a 27% year-over-year increase in operating profit, compared with a 7% increase for the Industry Average and no increase for Laggards.

The objective of any analytical undertaking is to improve the accessibility and fluidity of data, create more meaningful insights,
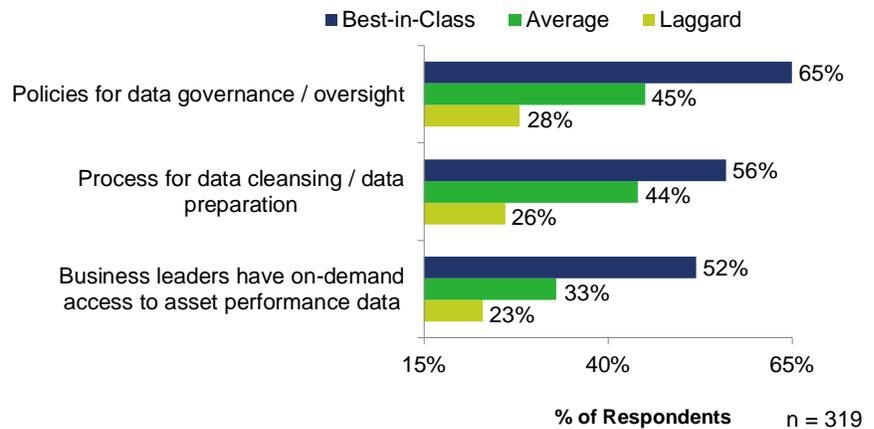
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and exploit those insights to deliver business performance. Regardless of industry or company size, the metrics described above would be enticing for any data-driven organization. The question then becomes *how*? How are Best-in-Class Companies able to accelerate the decision process and achieve those results? Part of the answer to that question lies in the maturity of these leading companies when it comes to managing their data (Figure 2).

Figure 2: Best-in-Class Handle Their Data Wisely

Source: Aberdeen Group, April 2017

The research demonstrates that top companies are responsible when it comes to the governance and oversight of their data. They're more likely to have policies and procedures in place to control access to data and improve track and traceability.

However, these processes don't act as hindrances to the mobility of data within these companies, as 85% of the Best-in-Class saw improvement in the breadth and volume of available data. Moreover, these leading organizations use the right processes and technologies for data preparation to ensure that the data is both relevant and consumable for the analytical systems in place, as well as the users who would be interacting with them. More to the point of data accessibility, a majority of Best-in-Class companies

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While the technology for capturing and utilizing IoT technology is still relatively new and certainly evolving, there are dedicated software platforms purpose-built for handling data from a multitude of different IoT sources.

report having on-demand access to asset performance data, a capability that allows them to measure, monitor, and improve in near real-time as opposed to in a batch-oriented fashion.

Hand-in-hand with the organizational maturity described above, Best-in-Class companies also demonstrate judicious use of the right technologies to exploit IoT data (Figure 3).

Figure 3: Enabling IoT Excellence
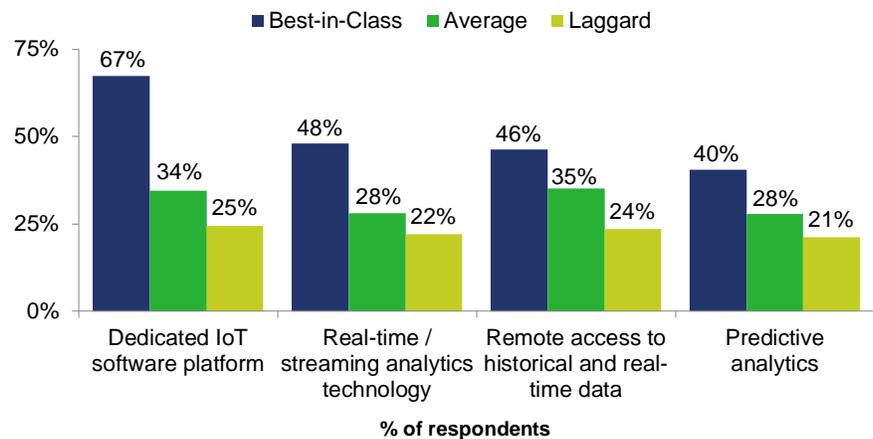
n = 319, Source: Aberdeen Group, April 2017

First off, while the technology for capturing and utilizing IoT technology is still relatively new and certainly evolving, there are dedicated software platforms purpose-built for handling data from a multitude of different IoT sources. These platforms would allow for the capture and monitoring of IoT data, as well as the ability to model it for future decisions. Best-in-Class companies are twice as likely as all others to have a dedicated IoT software platform. The use of real-time or streaming analytics capabilities, along with the ability to access data remotely, enables these top companies to monitor critical metrics and respond to state changes much more quickly. Similarly, as they leverage technology

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to help capture real-time streaming IoT data, the Best-in-Class are also more likely to utilize predictive analytics technology. These tools enable organizations to place side-by-side both historical data and streaming IoT data to develop smarter and more sophisticated predictive models, and anticipate–rather than simply react to—critical changes in their operational environments.
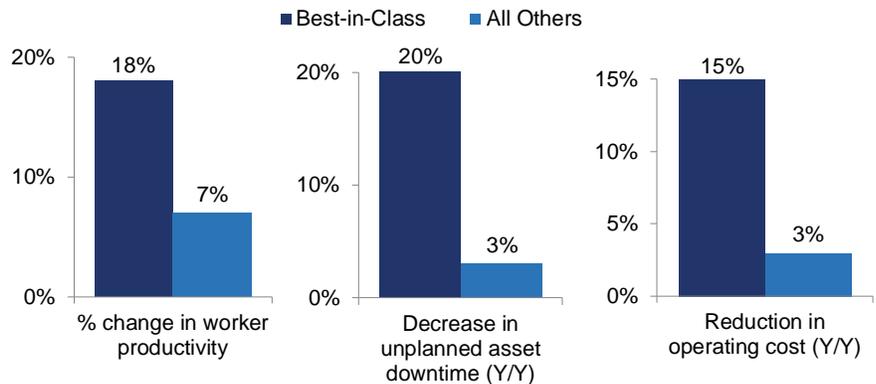
Superior Results

In addition to the performance discussed earlier, i.e., the metrics used to define the Best-in-Class, these companies were able to leverage their internal maturity and technology strategy to enhance performance in other ways as well (Figure 4).

Figure 4: Driving Efficiency to the Bottom Line

n = 319, Source: Aberdeen Group, April 2017

Having the right tools in place to capture, model, and act upon IoT-driven insight, Best-in-Class companies also saw substantial improvement in worker productivity. An informed employee is a productive employee, and the research shows that top companies are able to expand access to a variety of different data types (e.g., asset performance data as depicted in Figure 2). This visibility not only allows them to improve the output and performance of the

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> While storing every single tick, blip, and ping from every single device might not be feasible (or prudent), there are ways to hook into IoT streams and extract valuable data.

equipment in their operational environments, but also allows them to tailor their own activities towards the most impactful ones. Best-in-Class companies saw more than twice the year-over-year increase in worker productivity and almost seven times the decrease in asset downtime as compared to their peers. Perhaps more importantly, though, is the bottom line in this equation — and the focal point of any operating environment. These efficiencies in the decision process and improvements in productivity translate into significant cost reductions for Best-in-Class companies as they report an average 15% year-over-year reduction in operating cost.

Key Takeaways

While the overall volume of IoT data is growing at a breakneck pace, the number of companies with potential use for IoT data is also expanding rapidly. From manufacturing, to retail, public sector, and even healthcare, companies are increasingly curious about how to tap into this river of potential insight and improve their businesses. For those contemplating a more formal technology strategy for IoT, the following key takeaways summarize the most important findings from the research.

➔ **IoT data is there for the taking.** Best-in-Class companies these days aren't scared of their IoT data, nor should they be. While storing every single tick, blip, and ping from every single device might not be feasible (or prudent), there are ways to hook into IoT streams and extract valuable data. While it may be a challenging endeavor to find the right insight locked away in this data, the research would suggest that it's a better problem to have than storing data for compliance or corporate-mandated reasons.

➔ **Top companies build maturity in the data environment.**
Arguably the biggest contributing factor to the
performance of a Best-in-Class company is the seriousness
and thoughtfulness of the approach they take for
managing their data. On the process side, these companies
put efforts in place to share and socialize data across
different departments in the organization, but they do this
in a responsible and well-governed fashion. From a
technology perspective, top companies use the right tools
to integrate, normalize, prepare, and model their data to
better fuel their analytical processes and produce
actionable insights.

➔ **IoT-generated insights drive operational performance.**
While traditional BI technology started as more of a
strategic tool for managing the business (e.g., static
reporting on historical data), the technology quickly
became relevant on a more tactical or operational level.
IoT analytics is a modern-day extension of what might have
once been called operational BI. The companies that put
the processes and systems in place to capture data more
quickly, transform it into insight more smoothly, and act
upon it more decisively, are seeing substantial results.
Best-in-Class companies enjoy an expedited decision
process, a more productive workforce, and a lower
operational cost basis as a result.

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Related Research
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