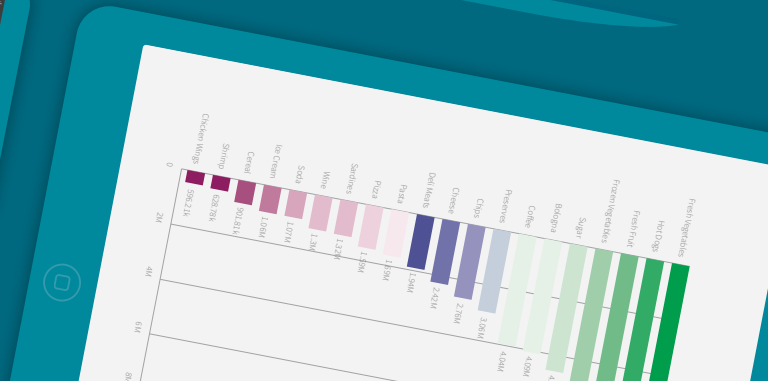
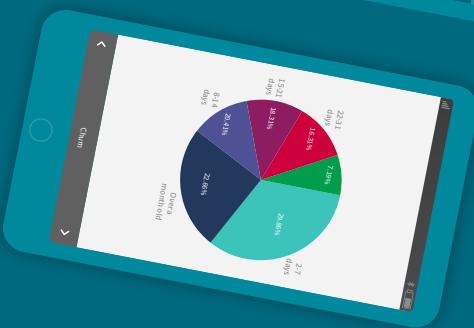


4 Fundamental Ways Data Is Changing the Face of Manufacturing



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HOW IS DATA IMPACTING MANUFACTURING?

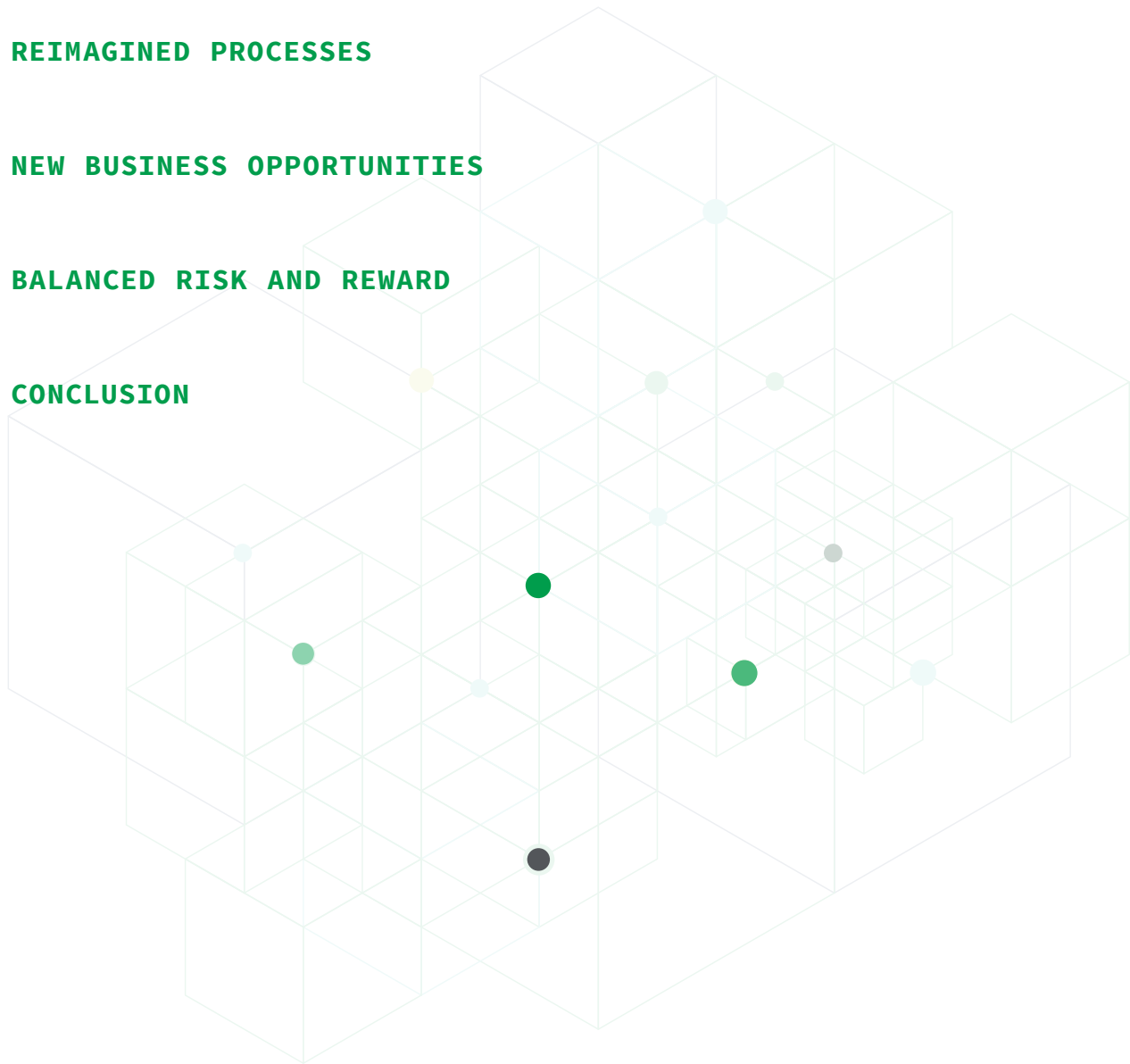
CUSTOMER INTELLIGENCE

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Introduction

How can you transform data into real business results?

Data, undeniably, is everywhere – and day after day, as the digital world transforms more human actions into data-generating experiences, its volume continues to grow. In fact, by 2025, data-driven interactions will reach 4,785 per person per day, as the global "datasphere" grows to 163 zettabytes.¹

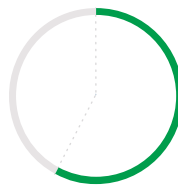
All of that data represents massive – and unprecedented – opportunity for manufacturing. Intelligence. Optimization. Innovation. Profitability. Growth. And competitive edge. So where do data-driven insights have the most impact? And what types of benefits can you expect to see?

In 2018, when asked to name their top objectives for their digital business strategy, the majority of organizations surveyed expected to see big results:²



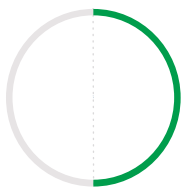
64%

expected to improve process efficiency through automation



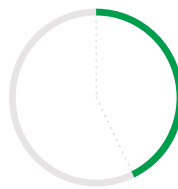
58%

expected to create better customer experiences



50%

expected to improve employee productivity



43%

expected digital business to drive revenue growth

Every one of these results can be achieved—and faster—with data.

How is data impacting manufacturing?

Every company is now a data company.

Forbes' David Kirkpatrick famously claimed, "Now every company is a software company."³ The same thing has become true of data: Every company is now a data company, too. That's because insights from analytics have become an essential driver of innovation, optimization, and competitive edge. Companies across the globe are using data analytics to radically transform their businesses.

For manufacturers, the need is urgent. Raw materials are more expensive, growth has slowed, and traditional methods for boosting productivity have been exhausted. Now it's time to make use of the massive troves of data flowing in from every direction. With cheaper computational power and rapidly advancing analytics technology, manufacturers can now bring together data from multiple sources and empower business users to explore it, visualize it, and discover new paths to reinvention.

The impacts of data-driven transformation tend to fall within four main categories:



Customer Intelligence



Reimagined Processes

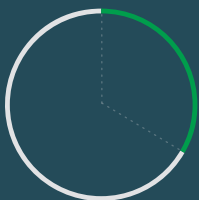


New Business Opportunities

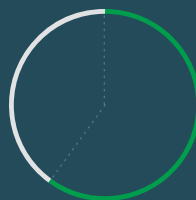


Balanced Risk and Reward

The future of manufacturing is digital.⁴



By the end of 2020, **one-third of manufacturing supply chains** will use analytics-driven cognitive capabilities, **increasing cost efficiency by 10%.**



By 2020, **60% of manufacturers** will rely on digital platforms that will **support as much as 30% of their overall revenue.**

“High uncertainty and low growth have already forced manufacturers to squeeze every asset for maximum value. The next target is their own data.”

McKinsey & Company⁵

Major industry trends – and where they open opportunity.

Major Industry Trend

Fundamental Outcome

The Connected Customer

Consumers have access to more information and more options than ever before. Manufacturers must:

- Understand customer demand, sentiment, and behavior
- Enable sales to intelligently target and engage
- Optimize profitability



Customer Intelligence

Industry 4.0 – The Smart, Integrated Factory

Manufacturers must balance modular smart factories, complex production requirements, high productivity, and large capital investments. Key areas of focus include:

- Equipment effectiveness
- Product lifecycle length
- Sensor data analytics
- Supplier and dealer collaboration and traceability
- Predictive maintenance



Reimagined Processes



New Business Opportunities

Agile Supply Chain

A global supply chain network with continuous product innovation, suppliers, logistics providers, and multichannel sales results in high complexity. Manufacturers must:

- Become demand-driven
- Ensure inventory availability
- Extend into after-market opportunities



Reimagined Processes



New Business Opportunities



Balanced Risk And Reward

Customer Intelligence

Improve customer experiences and drive increased lifetime value.

In the digital era, customers are more informed and empowered than ever. As a manufacturer, you have to compete for their attention by understanding consumer behavior, developing the right products, and intelligently engaging with consumers in a competitive marketplace. Fortunately, digital transactions give you valuable information – and plenty of it.

Manufacturers are using analytics to:



Deliver an omnichannel experience

- Get visibility into sales, inventory, customer, and supply chain processes, providing a true omnichannel view of the business
- Meet customer demand with relevant offers and a high-quality shopping experience across channels



Discover deeper customer insights

- Combine data from sales, marketing, and order systems to create a 360° view of the customer relationship
- Make the customer view available on-demand, including via mobile, to sales and marketing teams
- Analyze interactions along the customer journey to understand individual preferences
- Gain visibility into ordering patterns to create more compelling purchasing experiences
- Leverage social media to predict customer demand trends
- Understand how customer feedback and satisfaction have an impact on product direction and revenue



Increase conversion

- Design personalized and location-based offers that drive revenue and loyalty
- Link point-of-sale data to ERP and CRM systems, uncovering insights into customer spending patterns to target the most valuable customers with one-to-one marketing campaigns
- Combine shopping cart and loyalty program data to better target promotions

By combining customer retention, NPS, and wallet-share data, heating and cooling systems manufacturing Lennox optimized targeting for promotions and rebates. Projections show a 10% improvement in uptake, which could result in **\$5 million in additional revenue.**

“**Within days Qlik became indispensable to running the business... We received value from our investment immediately, improving IT staff productivity by up to 20% and now also improving stock holding days through better inventory management.**”

Haydn Jones

IT Operations Manager, Avnet Technology Solutions (Australia)

Reimagined Processes

Optimize every aspect of business for efficiency and productivity.

Manufacturers everywhere are using data to reinvent the way they run their factories, warehouses, and businesses as a whole. Across functional areas, they're applying data and analytics to dramatically lower costs, optimize operations, speed time to delivery, and more.

Manufacturers are using analytics to:



Strengthen supplier performance

- Monitoring supplier delivery, price, and service to strengthen negotiations and partnerships
- Using bill-of-materials analysis, parts and component permutation evaluation, cost trending and optimization, and supplier performance scorecards to ensure access to quality materials and components while maximizing profits



Maximize throughput and efficiency of machines

- Gaining real-time insight into how manufacturing lines are operating and analyze trends and excursions to improve yield



Optimize warehouse operations

- Analyzing inventory and sales across multiple nodes in the supply chain network, covering both geography and product category, to ensure product and inventory availability
- Analyze warehouse flow, product placement, storage, and retrieval to ensure that space is used efficiently, materials are handled well, and changing requirements are met



Increase efficiency in business processes

- Analyzing the full ecosystem of business processes, from product design to sales tactics, to maximize efficiency and effectiveness
- Gaining insights into sourcing and procurement, asset availability, work-order cycle times, and schedule adherence to eliminate waste

German automaker Audi uses analytics to achieve **98.5% accuracy in the delivery of components** for production, making sure the right materials arrive at the conveyor belt in the right quantities, in the right order, at the right time.

“**Having control over our entire supply chain and being able to analyze trends using an intelligent system brings us more value than could ever be expressed in monetary terms.**”

Geertjan Woltjes
COO, Quooker

New Business Opportunities

Develop new products, services, and revenue streams with insights gleaned from data – or monetize the data itself.

What do users *actually* want? What are their unmet needs? And where should you take your products or services next? Data can give you the answers. From there, you can vastly improve the quality of your current offerings, add compelling new features, or build something entirely new. And that's not the only way data opens up opportunities. You can diversify your offerings by creatively merging and analyzing new data streams – and monetizing the insights that result.

Manufacturers everywhere are using data to:



Evaluate market potential and market share

- Analyzing market size and share to determine fit of products to the market
- Comparing opportunity pipeline versus forecast by sales hierarchy, region, and product to invest resources where they'll get the most return
- Gaining insights into consumer behavior, availability of stock, and optimal pricing for the greatest return and sales network performance



Develop innovative products that appeal to customers

- Uncovering customer behaviors and preferences to drive development of new products, features, and services
- Using insights from engineering, component reliability, quality evaluation, and prototyping analysis to support innovation and design
- Tapping into new data streams, including the vast wealth of IoT data, and monetizing the insights
- Creatively combining external and internal data to produce proprietary new data streams and insights

Global tech giant Cisco associated all data from each business unit into a single customer view, empowering sales teams to intelligently up-sell, cross-sell, and follow up on renewals. The result? **\$100 million in new revenue and saved \$4 million in costs.**

“**Availability is our primary customer value. We deliver our products throughout Europe within 24 hours. To do this we need total control over our processes. To us, this is what Qlik is all about.**”

Lars Emilsson

Project Manager, Systemair

Balanced Risk and Reward

Get insight into internal and external factors to make faster, smarter decisions around risk.

You can see more deeply into your business – and even into external influences on your business – when you put data to work. With that visibility, you gain power to minimize risk and maximize reward. For example, you can simulate future scenarios in the market to predict which products you should develop (or not) and where you should roll them out. And you can consider supplier performance and data from trading markets to reduce supply chain risk.

Manufacturers are using analytics to:

Stay compliant

- Track and validate design, production, distribution, and service information on a global basis, through all stages of the lifecycle, both internally and externally
- Monitor individual contributor performance for compliance
- Monitor the supply chain to oversee whether ingredients are sourced and transported in alignment with regulations and best practices for quality and safety

Prepare for the future

- Combine historical supplier data with geo-analytics capabilities, running what-if scenarios to model supply chain risk in case of disasters
- Simulate future market scenarios and overlay the likely impact on current products, planned changes, and future investments

Handle demand volatility

- Compare on-hand inventory levels with average turnover to identify potential out-of-stock risks and revenue impact
- Strategically reduce inventory levels to recoup costs and redirect them into new opportunities

Manage costs

- Relating the amount of power consumed to the types and quantities of products built, enabling lower energy usage without impacting production
- Tracking efficiency and capacity use to select the best mode and carrier for shipping

Using geo-analytics to immediately determine which parts and products will be at risk given global events, auto parts manufacturer BorgWarner is more efficiently managing its supply chain, **saving \$8 million** in the process.

“Qlik enhances user experience in terms of the visibility of business dynamics in a way I have never seen in any other product.”

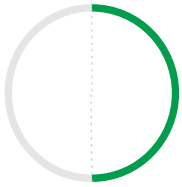
César Pérez

Head of Business Process Office, Sony Europe

Conclusion

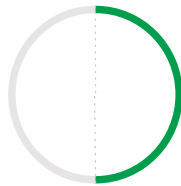
Reaping the Rewards of Data Analytics: Get Set Up for Success

In most organizations undergoing Digital Transformation, technology is changing faster than culture.⁶



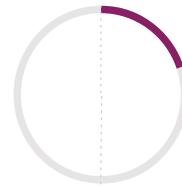
50+%

of enterprises already have data analytics, mobile technology, and private clouds.



50+%

of enterprises are researching or piloting AI, machine learning, and IoT for use in the next year.



19%

of enterprises have fully implemented a workforce strategy.

Data literacy is at the heart of the issue. In Gartner’s 3rd annual CDO survey, “poor data literacy” was cited as the second-highest internal roadblock (35%) to success, second only to “cultural challenges to accepting change” (40%).⁷ Clearly, a top priority for CDOs everywhere is creating a culture of data fluency, where workers understand data and use analytics to drive Digital Transformation.

What’s the next step in your journey toward reaping the rewards of data-driven Digital Transformation? Whether it involves expanding data literacy, extending your use of analytics into new business areas, or driving toward any of the outcomes covered in this report, we can help.

Start here → qlik@copleycg.com

¹<https://www.seagate.com/www-content/our-story/trends/files/Seagate-WP-DataAge2025-March-2017.pdf>

²<https://www.idg.com/tools-for-marketers/2018-state-of-digital-business-transformation-white-paper/>

³<https://www.forbes.com/sites/teconomy/2011/11/30/now-every-company-is-a-software-company/#1f17b6caf3b1>

⁴<https://www.idc.com/getdoc.jsp?containerId=US42126117>

⁵<https://www.mckinsey.com/business-functions/operations/our-insights/manufacturing-analytics-unleashes-productivity-and-profitability>

⁶<https://www.idg.com/tools-for-marketers/2018-state-of-digital-business-transformation-white-paper/>

⁷<https://www.gartner.com/doc/3834265/survey-analysis-gartner-cdo-survey>