



## Research and Analytics in Manufacturing: **Transform Comprehensive Insight** into Action and Value

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Analytics has gone into improving the effectiveness of marketing efforts, designing of financial products and raising the bar for customer satisfaction. The relevance for analytics has grown significantly across industries in recent times because of a highly dynamic market. However, not all industries are making the most of it. Manufacturing is one industry that has shied away from employing analytics to improve its business.

In a study by Ventana Research in July 2011, of 682 manufacturers, only one-third of the surveyed confirmed deploying data analytics. The same research found that companies that had set up business analytics effectively were seeing positive results through innovation and an increase in operational effectiveness. Data analytics, such as employing pattern-matching algorithms and other analytical tools, were found to have prevented situations such as supply chain bottlenecks. A key takeaway from the study: The timely sharing of manufacturing information across a company must be looked at from a strategic point of view for companies to realize benefits.

The benchmark research by Ventana demonstrates that manufacturers have not yet automated data integration and analytical operations to the optimum extent in order to generate desired results. Although most organizations know that successful Research and Analytics can provide a competitive edge in the marketplace, the management of data is more of an afterthought to most. Business analytics can provide a clearer picture of operations, faster alerts with regard to product tracking, better insight into market demand and optimized performance.

### Adaptive Manufacturing is Vital

Manufacturers are recognizing the importance of predictive and forward-looking analytics. Earlier, products were manufactured and then tools such as sales and marketing were employed to sell these products. Today, companies first estimate the demand for a particular product and accordingly plan out manufacturing. The entire manufacturing process is

focused on being 'adaptive' – where the sales forecast and expected demand is updated regularly. A Demand Driven Supply Network (DDSN) implies flexibility across the supply chain network, and this essentially means optimizing manufacturing operations. Creating an adaptive manufacturing operation means that the closed loop life cycle, such as production, evaluation, exception, resolution, compliance and continuous forecasting are tracked closely.

### Adaptive Manufacturing



The continuous monitoring of key performance measures and Service Level Agreements (SLAs) across the life cycle of the product manufacturing process can be done through business analytics. Hence, Research and Analytics is critical for creating sustainable competitive advantage.

### Challenges to Manufacturing Analytics

In order to realize the advantages of business analytics, manufacturing companies must overcome certain fundamental obstacles.



Managing data is a full-time responsibility and most companies do not have the capability to gather all the required data from different divisions within the organization as they are usually lodged in different systems. To begin with, manufacturers must understand the business case for investing in a Research and Analytics initiative. It will help them identify the necessary tools that need to be deployed in order to realize business value. Given below are some of the main issues faced by companies that prevent them from using manufacturing analytics effectively.

- **Data everywhere:** Factories generate a huge volume and variety of data. There is data created everywhere in an operation – whether it is information about quality parameters, process trends, maintenance events, parts and spares, material inventory and much more. In fact, this data flows into the manufacturing and business systems at an ever-increasing rate.
- **Data in, but not out:** Most manufacturing companies that collect data are unable to understand and analyze it effectively. It is important that organizations gain insight from the data trapped in these systems in order to improve their business.
- **Fragmented systems:** In fact, most of these systems actually make it harder to get data out, as the data is difficult to understand and hence is tougher to action. Typically, the more manufacturing and business systems a company has, the more difficult it is for the operation to make changes or troubleshoot complex problems.
- **Geographic and business ‘silos’:** Different geographies and / or businesses may operate in ‘silos’ at the functional level, thereby creating variance in data definitions and business rules. This makes consolidation and comparison of data a time-consuming and manual task.

### The Need for an Analytics Initiative in the Manufacturing Process

Adopting the required manufacturing analytics gives organizations the potential to operate with enhanced efficiency, improve business visibility, and support more rapid and effective decision-making. It is essential that the full value of massive amounts of information collected within organizations is derived. With newer technologies, more data is collected and the question of how to obtain the best value persists. Is competition getting access to sharper, more timely insights? Are they gaining an advantage because of this? Organizations need to know what is happening now, what is likely to happen next and what actions need to be taken in order to get optimal benefits.

The Massachusetts Institute of Technology Sloan Management Review partnered with the IBM Institute of Business Value to conduct a survey of 3,000 executives, managers and analysts working in over 30 industries and 100 countries in October 2010. The study showed that top-performing organizations use analytics five times more than lower performers.

### The WNS Approach: Creating a Manufacturing Analytics Center of Excellence (COE)

WNS, a leading Business Process Outsourcing (BPO) company, has strong analytic know-how and industry experience. The WNS Analytics team partners with clients to analyze underlying issues and achieve business improvement, by making decisions on reliable, real-time information. WNS has identified the following areas of focus for developing an Analytics COE for Manufacturing Operations:

- **Optimizing manufacturing strategy**
  - Insight to answer the key questions on sourcing strategy, make-versus-buy analysis, tax benefits optimization
  - Manufacturing portfolio capacity optimization and product flexibility planning
  - Demand Driven Supply Network enablement

*For a global leader in home entertainment products, WNS developed a custom forecasting model to optimize new DVD sales, which have a rapidly diminishing shelf life. This has resulted in improving store level forecasts by 40 percent and improved planning cycle time from one week to one business day.*

- **Enabling superior manufacturing ‘services’ to the distribution / logistics organization**
  - Visibility of manufacturing performance and integrated supply chain analytics
  - Automated and self-service manufacturing intelligence and analytics
  - Integration with upstream demand signal management and downstream distribution management processes

*For a global mining and metals client, WNS provides strategic sourcing intelligence – identify alternative sources of supply for specified commodities, supplier due diligence, supplier comparison and recommendations. This has reduced the client’s time to decision and make better decision with improved detail and supplier coverage.*

- **Enabling ‘LEAN’ and continuous improvement / operations excellence in manufacturing operations**
  - Data- and insight-driven targeting and prioritizing of initiatives
  - End-to-end process improvement score cards and dashboards – tracking change and governance for operations excellence initiatives

*For a U.S.-based manufacturer, WNS assisted in segmenting its inventory, optimized replenishment and safety stock algorithms. This has resulted in finished goods inventory improvement by 8 percent with constant service levels at the central distribution center. A further 20 percent improvement opportunity was identified for capital parts.*



*Other – customized Sales and Operations Planning, Spend Analytics dashboards for senior management decision-making support based on quantitative and qualitative data points.*

■ **Enabling corporate sustainability initiatives**

- Measuring and monitoring 'green' or 'sustainability' manufacturing initiatives like a lower carbon footprint, carbon credits
- Maintaining regulatory information, reporting information, warehouses, central document repository, for example - Environment, Health and Safety (EHS) reporting

*For an MNC client in the environmental compliance consulting, industrial filtration technologies, pollution control equipment, and maintenance services – WNS researches and publishes information on market trends, technological innovation, developments in industry, and legal and regulatory policies relating to environment by governments in regions of interest. This enables our client to assess both business risks and new product opportunities.*

■ **Human capital strategy**

- Monitoring plant staff productivity and designing incentive plans
- Seasonal plant staff planning and alignment with demand signals

Analytics can play an integral role in the manufacturing operations of an organization. It allows for accurate forecasting, identifying customer needs, efficient supply chain management and inventory planning. For an organization to effectively deploy manufacturing analytics, there needs to be leadership support, focus on optimized business processes, supply chains and supporting technology tools. WNS believes that the effective use of manufacturing analytics can boost performance within an organization. We partner with companies and ensure that they have the agility to operate profitably in today's economy.

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