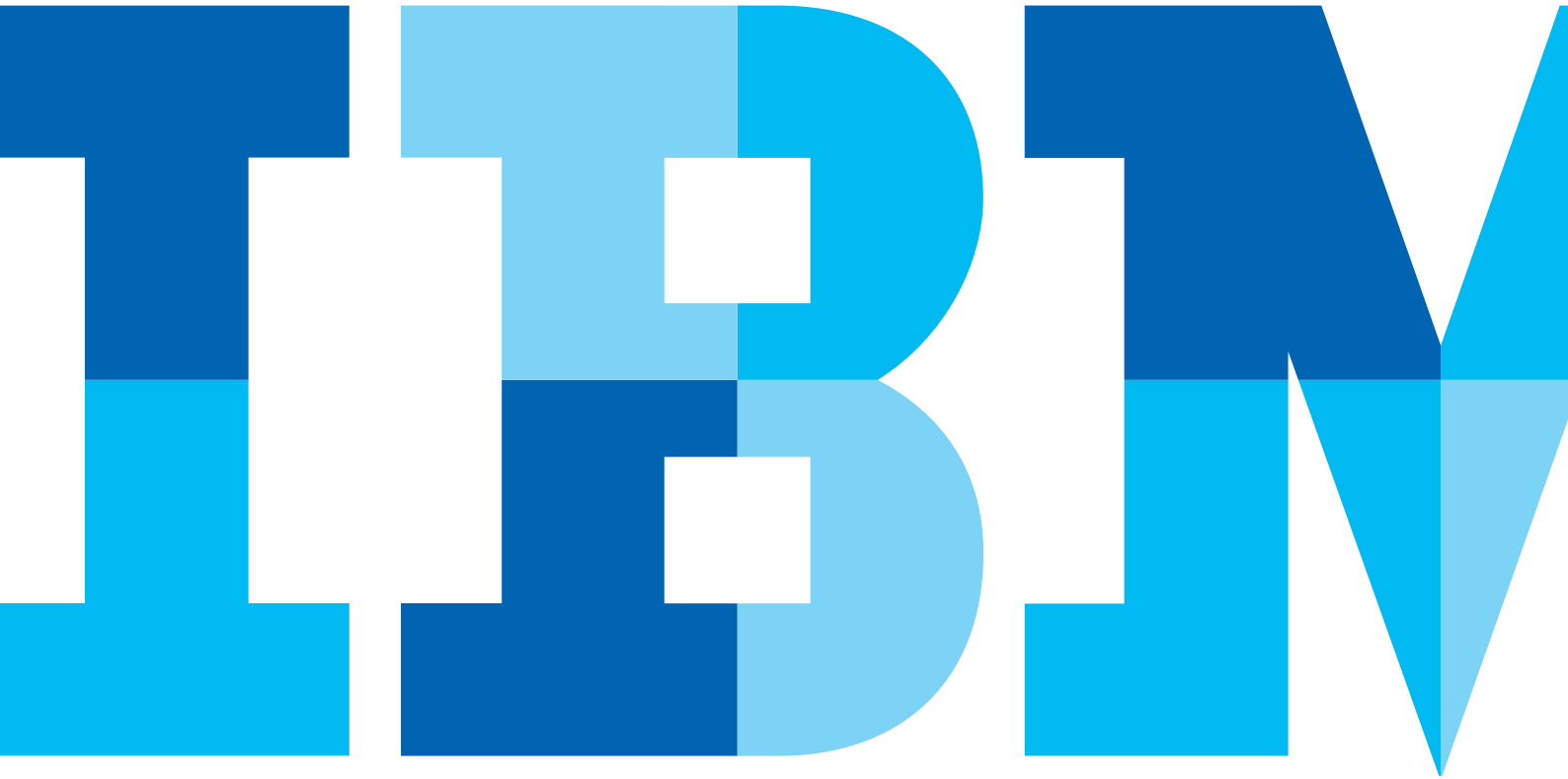# Business Analytics for Manufacturing

Three ways to win

Overview

Whether the economy is strong or weak, the fundamental strategies for surviving and thriving still hold true. Manufacturers have to be highly efficient to meet demand, production and supply requirements. Costs and resources also have to be managed carefully and intelligently.

At the same time, companies are considering new tactics: aligning innovation with business strategy, inventory optimization, intelligent supply chains and technology as a focal point of business strategy.

> " *…a sizable number of manufacturers have been placing a greater emphasis than in the past on generating new ideas that can benefit the business.*" [i]
>
> —Manufacturing Executive reader poll

In effect, your company needs access to critical data and visibility about how well your business, your market and your competitors are responding to today's challenging and changing times.

Staying ahead isn't easy. Data pours in from multiple systems, divisions and regions, and it is more real-time then ever before. IT departments are challenged to provide solutions that enable productivity and agility in the face of market and consumer demands. Manual processes, inefficiencies and lack of accountability add to the mix.

Companies need IT investments that will help them reengineer decision-making processes so management gains insight into the business and people can make informed decisions. Strategies include analytics and business performance measures, as well as enterprise manufacturing intelligence.

IBM Business Analytics software delivers complete, consistent and accurate information that decision-makers trust to improve business performance. A comprehensive portfolio of business intelligence, advanced analytics, financial performance and strategy management and analytic applications gives manufacturers clear, immediate and actionable insights into current performance and the ability to predict future outcomes.

IBM Business Analytics offerings, including Cognos® and SPSS® software, allow manufacturers to leverage new intelligence to create sustainable and competitive advantages. IBM analytics and performance management solutions provide an enterprise planning, consolidation, business intelligence (BI) and modeling platform that helps companies plan, understand and manage financial and operational performance.

With core capabilities including reporting, analytics, dashboards, planning, scorecards and more, companies can understand performance and make better decisions. With trusted, accurate and timely information to the right decision-makers at the right time, manufacturers can optimize business performance.

And with critical insight across the business, they can improve service levels, gain visibility into revenue and profitability performance, control costs and better manage their extended and complex supply chains.

[i] David R. Brousell, Annual Innovation Reader Poll: *Annual Innovation Reader Poll: Damn the Recession! Full Speed Ahead, Manufacturing Executive,* November 5, 2009

This white paper highlights how business analytics and performance management can help you meet demand, increase customer profitability and be more operationally efficient. And it examines three focus areas where using IBM Business Analytics software can help you gain rapid insight, real ROI and the quick wins needed to stay competitive.

What is manufacturing performance management?

To stay ahead in a competitive marketplace, you need to spot trends, optimize efficiencies and make informed decisions quickly. With business analytics and performance management, manufacturers gain access to the reliable, timely information that drives better decisions. IBM Business Analytics software integrates and leverages your financial and operational data and allows your organization to employ the following capabilities to answer your critical business questions:

Dashboards and scorecards
IBM Cognos Business Intelligence software communicates your strategy and objectives through metrics-based scorecards and dashboards.

It provides managers with the information they need to take ownership of their performance – visibility into strategy and an understanding of the part they play in making the strategy succeed and the metrics to measure their success.

Use Cognos scorecarding and dashboards to:

- Aggregate operational data from multiple silos, diverse business lines, regions and across the organization
- Measure performance against strategic company initiatives
- Gain a high-level overview of performance across key areas such as inventory, supply chain, quality control and fulfillment
- Monitor operations or supplier performance by a specific metric such as on-time delivery
- Track financial goals in terms of growth, profitability, key controllable expenses and return on net assets

"The biggest benefit to our organization of the IBM Cognos system is the clarity the methodology provides. Our scorecard initiative makes it easier to spot areas for improvement, keep focused on goals and measure progress."
—Mark Lack, Planning and Financial Analysis Manager, Mueller Incorporated

Reporting and analysis

Consolidating the large data volumes your organization amasses is a huge challenge. It is especially difficult given that there are also many tools used to analyze and report on the data, creating more islands of information.

IBM Cognos Business Intelligence software includes reporting and analysis to consolidate your critical data and turn it into meaningful information and reports that everyone can use. You can quickly spot trends and drill down to discover underlying causes and issues.

The flexible, user-friendly reporting means everyone has the right information delivered in the right way – across all departments, locations, functions and roles.

With a single, standardized BI platform for reporting and analysis, you can accurately assess the "Why?" behind operational activity and performance. This provides the necessary context for making decisions.

Use Cognos reporting and analysis to:

- Analyze sales to understand demand, optimize staffing levels and enhance operations
- Identify the processes and operations that generate unfavorable variances
- Reconcile inventory, production and demand information to meet customer requirements
- Report on performance by department, employee, machine, customer, supplier and operation
- Reassess and optimize the product mix for a specific region

Predictive analytics: anticipate and respond with more precision

IBM Business Analytics software solutions also include IBM SPSS Predictive Analytics software, which helps manufacturers predict future events and proactively act upon that insight to improve performance.

Manufacturing companies can shift to a smarter, fact-driven enterprise by applying advanced analytics to an integrated set of information. Analytics and optimization can help your organization predict the likely impact of actions to improve decision-making and see what you previously couldn't.

Manufacturers that capitalize on predictive analytics are achieving new breakthroughs in business process improvements and cost efficiency. These organizations are using insight and innovation to strategically position themselves to capture market share. Our advanced innovative research in data analytics and optimization helps us to establish a proactive versus reactive strategy to enhance performance and improve operational efficiency.

Predictive analytics help manufacturers anticipate change so that you can plan and carry out strategies that improve results. By applying predictive analytics solutions to data you already have, your organization can uncover unexpected patterns and associations and develop models to improve operational performance.

Optimization solutions for complex supply chain, risk management and marketing investment, for example, can mitigate risk, transform business processes and predict outcomes with greater certainty.

Budgeting and planning

Many manufacturers still use spreadsheets as their primary vehicle for planning and budgeting. Spreadsheet-based systems create islands of financial and planning data, where everyone works independently.

What's required instead is a solution that replaces a fragmented process with continuous, collaborative planning that supports your business drivers and delivers up-to-date insight into performance.

Cognos software helps you to address "What should we be doing?" by allowing you to set strategic initiatives and turn them into discrete plans and budgets for the entire enterprise – from central office to plants, and marketing to distribution centers.

Use Cognos software to:

- Develop long-range, financial, cost center and headcount plans, forecasts and budgets across the enterprise
- Gain consensus, and consolidate top-down and bottom-up operational plans with financial plans
- Increase accountability across the organization through a high-participation planning process
- Support timely updates of forecasts to address changing market influences, new initiatives and competitive factors
- Manage key plans like sales and operations planning (S&OP) with flexible, connected software to reconcile sales and demand forecasts with supply chain and production plans, and test multiple cost scenarios

With integrated plans, BI reporting and analysis, and performance metrics, you can dramatically improve your understanding of the organization. And this improves your ability to make timely and informed decisions that improve operations, increase sales and drive profitable growth.

"What was brought aboard was a way to record just how efficient the lines are running, since we have a 24-hour day to make products, we need to do it efficiently. We collect production data, but we need to report on and analyze it. That's where the Cognos tool has provided real value."
—Craig Sindorf, BI Manager of Supply Chain at Dr Pepper.

Result one: smarter supply chains

Global supply chains hold out big potential for production, cost management and efficiencies. Orchestrating the chain, however, requires more than just mastering logistics. A recent executive report by the IBM Institute for Business Value—"New Rules For a New Decade"—points to new rules to optimize supply chain performance:

1. Know the customer as well as yourself. Smooth volatility with predictive demand.
2. See what others do not. Unveil visibility with collaborative insight.
3. Exploit global efficiencies, and enhance value with dynamic optimization.

Visibility

Performance management and business analytics provide organizations with complete visibility into-and-across their supply chains. It brings together data residing in different systems and at multiple levels of granularity.

Managers can monitor performance at the global level, analyze performance across processes, products or suppliers and dive down to transaction-level detail. They can identify key metrics, measure performance and receive alerts when performance is off-track and make immediate corrections.

Predictability

With Cognos software, future results become more predictable. Through regular reporting and analysis, managers can identify events, trends or other conditions that lead to problems. This helps them become proactive and eliminate problems before they occur.

Managers can analyze trends in operations, and build financial models and sales forecasts that help them make better decisions about resources and suppliers as well as new products. Companies can also take pre-emptive action to prevent inventory shortfalls, delays and other events that hurt performance.

Complete and connected information

Cognos software provides managers, partners, suppliers and customers with the complete and consistent information they need to produce meaningful and actionable analysis. Reports, analysis and other information can be distributed through a centralized portal or extranet.

Effects of decisions can be evaluated so people understand the cost-to-serve and make better decisions. Complete, connected information enables better collaboration. If a flaw or delay is identified, managers, suppliers, partners and customers can be alerted and work out a collaborative solution.

For more information, download the white paper Orchestrating the chain: Supply chain performance management.

Benchmarks and your supply chain

Benchmarking allows you to compare the metrics of a process or method against an industry standard or against best practices from other companies.

Cognos scorecards support the Supply-Chain Operations Reference-model (SCOR) developed by the Supply Chain Council. The SCOR model provides a framework that links processes, metrics, best practices and technology to improve supply chain management.

The IBM Cognos SCOR Blueprint is a scorecarding application that includes more than 400 predefined metrics and linkages to the SCOR Performance Attributes. The SCOR Blueprint provides:

- A comprehensive metrics approach that includes a predefined metrics database and impact diagrams
- Standard performance reports and analytics, as well as alerts
- Insight into underperforming metrics
- Defined metrics ownership and responsibility

According to AMR Research, "Measuring performance and periodically benchmarking it are critical components to the ability to excel over time. The best companies do this right. However, while doing all of this is important, good processes and governance will only get you halfway there. Most important in this effort is the clarity that you are benchmarking to improve end-to-end supply chain performance in the context of company goals and making it an ongoing process to drive continuous improvement." [ii]

Read the full AMR Research report: Benchmark Your Supply Chain: Seven Factors for Success.

Result two: increased operational efficiency

Manufacturers must respond to market trends and economic challenges by shoring up internal operations to ensure that the entire organization is running at peak efficiency. This requires an in-depth understanding of how well the company is operating relative to its historical trends, its peers and the overall market. To gain this insight, your company needs the ability to connect operational details to business drivers.

Scorecarding, for example, is a valuable application for finding new efficiencies. With scorecards, companies can distill information into a small number of metrics and targets to immediately see how they are performing.

A dynamic marketplace also presents manufacturers with a business problem: how to match product demand with production and supply chain capabilities.

Organizations need enterprise forecasting and planning capability to effectively coordinate both market needs and the capabilities of the business. In this case, S&OP becomes the basis for aligning sales, marketing, supply chain and finance.

[ii] Debra Hofman, Jan Barrett, and Lora Cecere, Benchmark Your Supply Chain: Seven Factors for Success, Industry Value Chain Strategies Report, AMR Research, May 2008

An effective S&OP process:

• Links day-to-day operations with business goals, operational planning and financial planning
• Helps model the effect of meeting demand on the company's supply capabilities and financial goals
• Provides visibility into the P&L impact of plans
• Becomes the tool for senior executives to manage the business and customer demand but also looking at the most cost effective way of meeting that demand

The IBM Cognos Sales & Operations Planning Performance Blueprint integrates planning activities across finance, operations, production, purchasing, sales and marketing.

Using a common platform and workflow, departments coordinate their sales and production plans. Sales and marketing forecast product demand and revenue, and plan campaigns.

At the same time, schedulers carry out capacity, cost and throughput modeling of products and plants to determine the right combinations. Meanwhile, the supply organization evaluates supplier capabilities in-line with materials and builds plans.

Once they're rolled up the information, management and finance teams review, analyze and align plans with corporate goals and objectives. Using this coordinated process, it's much easier to reconcile sales and demand forecasts with supply plans and financial goals.

There is also more time for analysis and rolling forecasts. Since the business can quickly adjust plans and targets as needed, it stays on top of market changes or new opportunities and issues such as supply chain disruptions.

S&OP modules

The goal of S&OP is to tightly link sales, marketing, supply chain, manufacturing and finance so management can see the financial impact of plans, note variances between supply and demand plans, and identify supply constraints and align actual results with financial and operational targets.

With this in mind, the IBM Cognos Sales and Operations Planning Performance Blueprint provides three modules to standardize your S&OP process: demand planning, distribution and executive review.

Demand planning allows you to predict the future customer demand for a set of items. You can use the S&OP Demand Planning module to reconcile sales and demand forecasting with supply plans.

Using the S&OP Distribution Module, you can test major constraints in the planning process: inventory targets and budgets; warehouse space; service versus cost trade-offs; and other elements such as carrying costs and capital investments, variable costs and fixed cost budgets.

Finally, the most effective S&OP process involves periodic reviews by senior management – to evaluate performance against the existing plan, identify any business or market changes that might require changes to the plan and make adjustments.

The S&OP Executive Review Module facilitates the periodic review. Here, management can perform what-if analyses and immediately determine the effect of changes on a set of integrated financial statements including the Income Statement, Balance Sheet and Cash Flow.

"The planning process is smoother now, not to mention faster and more efficient. We have a central overview of plans, which are implemented entirely by business users in our international subsidiaries through the Web. R&M has been pursuing an IBM Cognos strategy for several years now. Users find the solution to be user-friendly and reliable, and roll-outs have always gone smoothly."

—Andreas Zill, Corporate Controlling, R&M

Increase operational efficiency via predictive maintenance

Early identification of maintenance requirements and operational issues is critical to preventing production interruptions, improving usability and service levels for customers, and meeting and exceeding SLA expectations. The following IBM SPSS predictive maintenance solutions combine data from disparate sources and automatically detect failure patterns, enabling preemptive deployment of maintenance and repair resources and dramatically saving downstream costs.

- **Predictive Maintenance for Production Line Continuity**—manufacturers can utilize predictive analytics to identify when internally used production machinery, equipment and assets are likely to fail or need service, and can perform preventive maintenance to maximize production uptime and minimize disruptive, costly unscheduled downtime.
- **Predictive Maintenance for Field Level Customer Service**—you can leverage predictive analytics to identify when equipment in the field is likely to fail or need maintenance so you can maximize uptime/ in-service time for equipment sold to customers or used to deliver service.
- **Predictive Maintenance for Warranty Claim Cost Reduction**—IBM SPSS predictive analytics solutions can help you identify when goods and equipment sold to customers is likely to fail so you can identify root causes for problem correction and proactively address issues to reduce warranty costs and improve customer satisfaction

Result three: reliable financial planning

Becoming a leaner organization means swapping out inefficient processes in favor of new systems capable of driving ongoing performance.

It is becoming increasingly important to align financial forecasting with the business cycles that prevail in your key markets. By replacing rigid annual budgeting with continuous planning – on a monthly, weekly or even daily basis – you can position your organization to achieve higher performance in both good times and bad.

With real-time visibility into up-to-date data, your decision-makers can create rolling forecasts that take a broad range of potential future scenarios into account. Using predictive analytics, business leaders can also develop action plans for variable future outcomes, increasing business agility and responsiveness.

Complete planning, budgeting and analytics

Cognos software provides a complete planning, budgeting and analytics environment to help you deliver timely, reliable forecasts and plans. You can rapidly analyze and model planning requirements for your entire organization and use them to anticipate the correct course of action for better business outcomes.

The solution supports a full range of business requirements—from high-performance, real-time financial analytics, such as for customer and product profitability, and flexible modeling—to enterprise-wide contribution from all business units. Cognos software:

- Reduces planning cycles by 75 percent and reporting from days to minutes
- Is owned and managed by finance and lines of business
- Provides exceptionally fast performance for large, sophisticated models and large data sets
- Features personalized planning and analytics—within a managed planning process—to explore performance gaps and validate corporate drivers
- Provides a flexible modeling environment that requires no programming or traditional IT skills

Summary

Decision-making happens at every level, in every function, in every region of your organization. Every one of those decisions is based on the information people have on hand. If that information is on target and reliable, timely and easy to consume, better decisions result. Information that is inaccessible or incomplete, late or inaccurate has a direct and negative impact on decision-making, and ultimately, business performance.

This paper summarizes only three ways that manufacturers can succeed with business analytics and performance management. Cognos software is enabling manufacturers to react quickly to changing markets, operate more efficiently and continue to pursue growth by helping them gain deeper insight into markets, operations and customer demand.

These benefits are the promise of business analytics and performance management. IBM Cognos software allows users to leverage existing investments from multiple sources, and it delivers the full range of integrated capabilities business users need to monitor the business, make better decisions and plan for better business outcomes. When the going gets tough, the tough need insight. That's why leading manufacturing organizations turn to IBM. For more information on Cognos solutions for manufacturing please visit www.ibm.com/cognos/ manufacturing.

Welcome to a smarter planet

The signs of a smarter planet are all around us. Smarter systems are being implemented and are creating value in every major industry, across every region in both the developed and developing worlds. This idea isn't a metaphor, or a vision or a proposal—it's a rapidly emerging reality. At IBM, we mean that intelligence is being infused into the systems and processes that make the world work. Find out more about your smarter planet and join the conversation.

About IBM Business Analytics

IBM Business Analytics software delivers complete, consistent and accurate information that decision-makers trust to improve business performance. A comprehensive portfolio of business intelligence, advanced analytics, financial performance and strategy management and analytic applications gives you clear, immediate and actionable insights into current performance and the ability to predict future outcomes. Combined with rich industry solutions, proven practices and professional services, organizations of every size can drive the highest IT productivity and deliver better results.

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