IBM Institute for Business Value

Supply chain benchmarks highlight the importance of analytics for optimized performance

Study quantifies improvements associated with better analytics capabilities

Overview

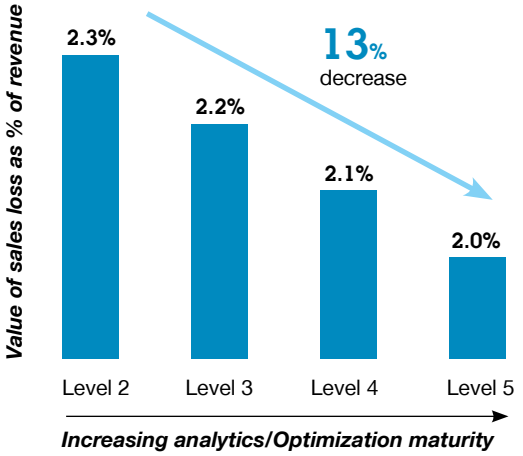
The IBM Institute for Business Value provides a business process benchmarking service that helps clients measure their current state and compare their performance against peers; these benchmarking services can be provided as part of a process transformation initiative or similar engagement. A recent benchmarking program survey of more than 500 logistics managers provided insights about their organizations' logistics performance and practices. Analysis of the data suggests it is possible to quantify the benefits an organization can gain through superior analytics capabilities by analyzing key metrics, such as sales loss due to stockouts or forecast error.

Supply chains are under pressure. The global recession has increased the always-present pressure to contain costs while managing complex and globally distributed operations. Increasingly informed and empowered consumers have higher expectations regarding products, services and even corporate social responsibility. Customer demand variability is a top challenge amid this climate of volatility. Companies must manage these pressures – and more – while remaining adaptable in an often shifting and unpredictable business climate.

Operational managers know that their ability to collect and analyze information and use it for predictive modeling is critical to optimizing all the various tradeoffs considered in their decisions. Today's environment is too complex for decisions to be made solely using rules of thumb or past experience. ***But is it possible to quantify the benefits an organization can achieve through better analytics and optimization capabilities?*** For example, a data warehousing project can be a massive investment. Having centralized and standardized transactional data is clearly a foundational dependency for fact-based analysis, but is there a way to quantify the expected return on investment from such a project?

Findings from our recent IBM benchmarking survey suggest that it is indeed possible to quantify the value from enhanced analytics and optimization capabilities. More than 500 logistics managers completed a survey in late 2010, assessing their organizations' capabilities on a carefully constructed continuum of maturity and also providing their organizations' results for selected key performance indicators. The findings were statistically analyzed to identify significant correlations.

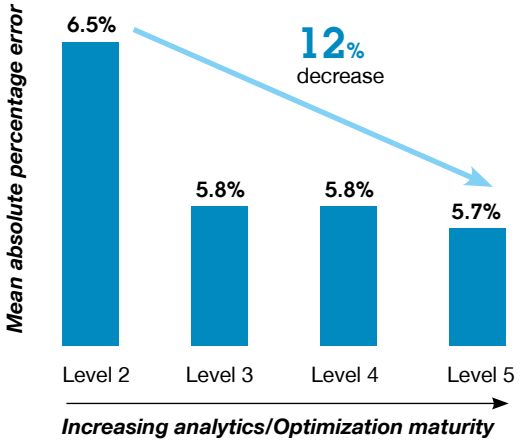
Sales loss due to stockouts or lack of production capacity *(80th percentile "benchmarks")*



Notes: Coefficient of correlation = -.165. Significance = .001 (less than .05 statistically significant). N = 405

Figure 1: **Comparison of aggregate results of top performers within each level of maturity.**

Monthly sales forecast error by shipping location *(80th percentile "benchmarks")*



Notes: Coefficient of correlation = -.086. Significance = .04 (less than .05 statistically significant). N = 571

Figure 2: **Comparison of aggregate results of top performers for forecast error within each level of maturity.**

Better analytics reduce stockout sales loss by 13 percent and forecast error by 12 percent

Higher analytics and optimization maturity was associated with lower loss of sales due to stockouts or lack of production capacity (see Figure 1).

It is not surprising that better visibility into transactional data and better capabilities to analyze and leverage that data in predictive models would result in fewer instances where an organization loses the opportunity to deliver on a sale. However, the finding from this study is of particular interest because it quantifies that relationship.

A similar benefit was found for forecast error. Having access to structured operational data may be a key differentiator for lowering forecast error, as shown in the difference between aggregate top performers for this metric at Level 2 maturity (where structured operational data was not available) and Levels 3, 4 and 5 (see Figure 2).

The findings provide a directional guideline for quantified benefits from each successive increase in analytics and optimization maturity. For some metrics, there is a relatively constant rate of improvement with each additional level of maturity; for other metrics, the findings suggest what could be considered "low-hanging fruit" – a minimum threshold of capabilities whose attainment may yield the most significant benefits.

This benchmarking study serves as a foundation to measure and compare analytics capabilities across industries. But it also illustrates how best-in-class companies can use visibility and advanced analytical data to help make their supply chains more agile and integrated – internally and externally. This, in turn, can enable them to more effectively respond to changes in customer demand, varying market conditions, potential disruptions and other deviations from plan.

Real supply chain visibility requires real analytics

Clearly, improving supply chain visibility in any manner is a key strategic imperative that continues to grow in importance in managing today's globally integrated enterprises. To address this, many companies are implementing "virtual command centers" to fuse realtime information, event processing and advanced analytic technologies. They are:

- Providing visibility to events, with alerts and performance indicators in realtime on personalized dashboards – a virtual control tower for monitoring global activities
- Integrating and synchronizing end-to-end supply chain information from the entire network (suppliers, contract manufacturers, logistics service providers and customers)
- Monitoring events and performance for out-of-tolerance conditions and making in-stream, corrective decisions
- Aggregating or segmenting information for trend analysis, automating business rules and recommending actions based on performance criteria.

Key Contacts

To learn more about IBM's supply chain solutions, contact one of our executive supply chain management leaders in your local geography:

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For more detail on supply chain challenges, trends, future insights and new business models, please reference "New rules for a new decade: A vision for smarter supply chain management." For related logistics benchmarking, please reference "The GMA 2010 Logistics Benchmark Report: Performance reaches all-time high during economic depression."

To learn more about the IBM Institute for Business Value Benchmarking Program, visit **ibm.com/**iibv.

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