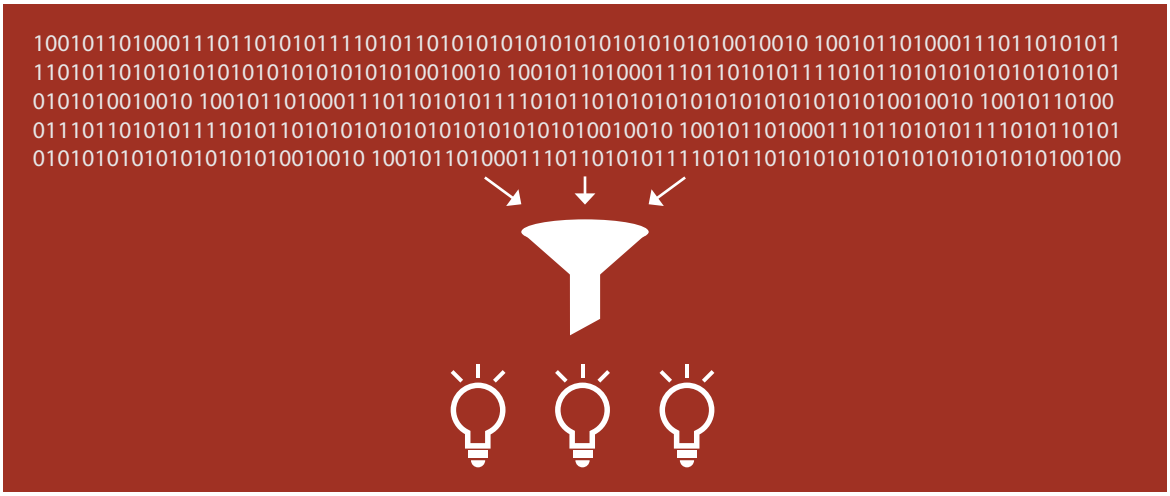


From Information Overload to Actionable Intelligence

Strategies for **Mid-Market** Resiliency through Supply Chain Analytics

TAKE SUPPLY CHAIN

Contents

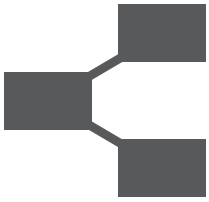
Executive Summary

In the past few years, the amount of data that companies must assimilate, transmit, analyze, and archive has grown to a critical mass that requires intelligent, effective management tools and processes in order to stay competitive. According to a report published by analyst firm IDC in 2010,[1] the data growth trend is expected to continue – in fact, it is expected to increase exponentially. Based on their studies of the amount of digital data since 2007, IDC found that data growth began to set new records in 2009, when the amount of data grew 62% over the previous year. This trend led IDC to predict that by 2020, the amount of digital data will be *44 times* the amount as in 2009.

Clearly, it is difficult to visualize and comprehend these abstract quantities. Yet this preoccupation with quantity has created the recent hype surrounding "big data" and technologies designed to process astronomical *volumes* of information. All the attention paid to data volume has often obscured the critical business concern wrought by the phenomenon. That is, the business need is not just about how to process *quantity*, but more specifically about intelligent solutions for accomplishing the increasingly difficult task of sifting out the *relevant* data amidst so much "noise." Then, companies need strategic management processes in order to turn the raw data or "information" into *actionable business intelligence* for effective, measurable performance improvements and predictive analytics.

Although it has commonly been used for historical trend analysis, BI information is increasingly transitioning to a powerful real-time decision making tool for the most critical supply chain functions. The recent proliferation of "out-of-the-box" solutions targeted to mid-market companies, with lower costs and faster implementation, provide a new opportunity to harness analytical capabilities previously available primarily to large (Tier 1) corporations. Additionally, the mid-market's tendency toward *nimbleness* – due to more centralized management and less bureaucracy than larger firms[2] – provides the key ability to quickly implement business decisions based on analytic data. This nimbleness bolsters a company's resiliency in the face of disruption, and a properly selected BI tool enhances speed and agility even further.

This white paper provides tips, tools, and management strategies to help mid-market companies select the right BI tool to differentiate between critical supply chain data and information "noise," and then integrate important data across the enterprise to create true business intelligence analytics for a smarter, agile, and resilient chain.

MID-MARKET  **Decision Making**

[1]Gantz, John and Reinsel, David. *The Digital Universe Decade – Are You Ready?* IDC, May 2010.
[2]National Center for the Middle Market, *The Resilient Supply Chain*, 2013.

Business Intelligence vs. Data "Noise"

The strong positive correlation between a company's effective use of data and financial performance, as reported by a recent study of 530 senior executives,[3] intuitively makes sense. Companies with the greatest abilities to quickly access, analyze, and act on real-time critical data gain measurable competitive advantage. High-profile companies such as Facebook, Google, Amazon, and Wal-Mart have demonstrated the power of data to gather consumer information and target marketing to drive financial success.

Now, mid-market companies are also entering the arena to determine a best-practice model for siphoning the data "noise" from critical data needed to make supply chain decisions. They may have only recently implemented solutions to integrate data from all or most of their systems – which can include one or more ERPs, supply chain management, transportation management, warehouse, financial reporting, and vendor system data from suppliers, CMOs, and/or 3PLs. This is in addition to any unstructured data that can be pulled from relevant emails, instant messaging, or corporate intranet applications.

Another origin of data "noise" is the industry hype around data itself: Especially in small and medium-sized businesses, the buzz around "big data" has often led companies who wrangle with more accessible datasets (and smaller budgets) to think that the solutions focused on data analytics may not be relevant to their business. Yet this is precisely where understanding the difference between *data* (information) and *business intelligence* (BI) is crucial.

Business intelligence (BI) is defined as *knowledge gained through the access and analysis of business information*.[4] BI tools and techniques most commonly used in supply chain networks include query and graphical reporting capabilities as well as visual analytic dashboards to monitor KPIs and supplier performance.

Query

Graphical Reporting

Visual Analytic Dashboards

[3]Economist Intelligence Unit, *Fostering a Data-Driven Culture*, 2013.
[4]Dresner, Howard. *The Performance Management Revolution: Business Results Through Insight and Action*, 2007.

Business Intelligence vs. Data "Noise"

In simple terms, BI is about taking the raw data that already exists about important functions such as supply chain metrics, supplier performance, or delivery schedule (logistics) requirements and transforming it into near real-time reports or graphs that provide clear insight for management decisions. The challenge lies in two critical areas:

1. Gathering and interpreting the right data, which tends to reside in a variety of locations and formats: paper, engineering drawings, the ERP system, vendor and supplier systems for ordering and invoicing, or spreadsheets.[5]

2. Finding the right technology and process combination that meets your organization's:

    - business needs for user access and reporting
    - data volume expectations
    - integration and security requirements
    - time and cost to implement and maintain (total cost of ownership)
    - internal IT capabilities, which influence deployment method

The following sections provide guidance and strategies for mid-market companies to address each of these concerns in order to select and implement a supply chain management BI tool that best meets their specific data integration, business process, technology, and spend requirements.

[5]Information Builders, *Making Smarter Manufacturing Decisions with Business Intelligence*, 2011.

Strategies for Selecting a Successful BI Solution

1. Gather & Interpret Relevant Data
2. Evaluate Reporting & User Access Needs
3. Assess Volume Expectations
4. Determine Data Integration & Security Requirements

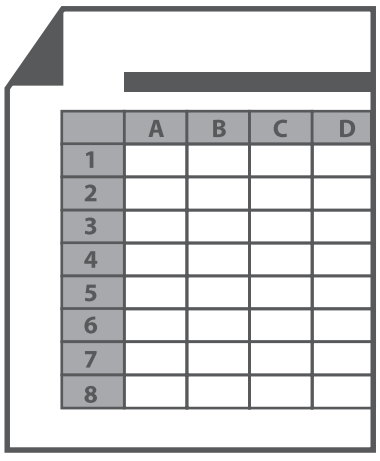
1. Gather & Interpret Relevant Data

Modern supply chain organizations of all sizes contend with growing volumes of data from multiple systems, suppliers, and vendors, as well as these common data management challenges:

- Data from a variety of new sources such as mobile devices and social media
- Increased speed required to process and analyze data in real-time

In addition to determining the required sources and types of data needed for effective supply chain BI, you will need to list and categorize the basic reporting and analysis requirements for users in your organization to ensure that your selected solution can meet these needs, at a minimum. First, some clarification of terms is in order: *analytics* and *reporting* are different processes that can require different data sets and displays:[6]

- **Analytics** includes predictive analytic capabilities that enable users to perform tasks such as forecasting, modeling, statistical, and "what-if" scenarios in order to gain new insights that feed directly into business strategy by predicting outcomes.
- **Reporting** includes charts, graphics, scorecards, dashboards, and other visual representations of actual performance in order to provide users with real-time illustrations of metrics in order to quickly react to any problem areas.



Analytics

Reporting

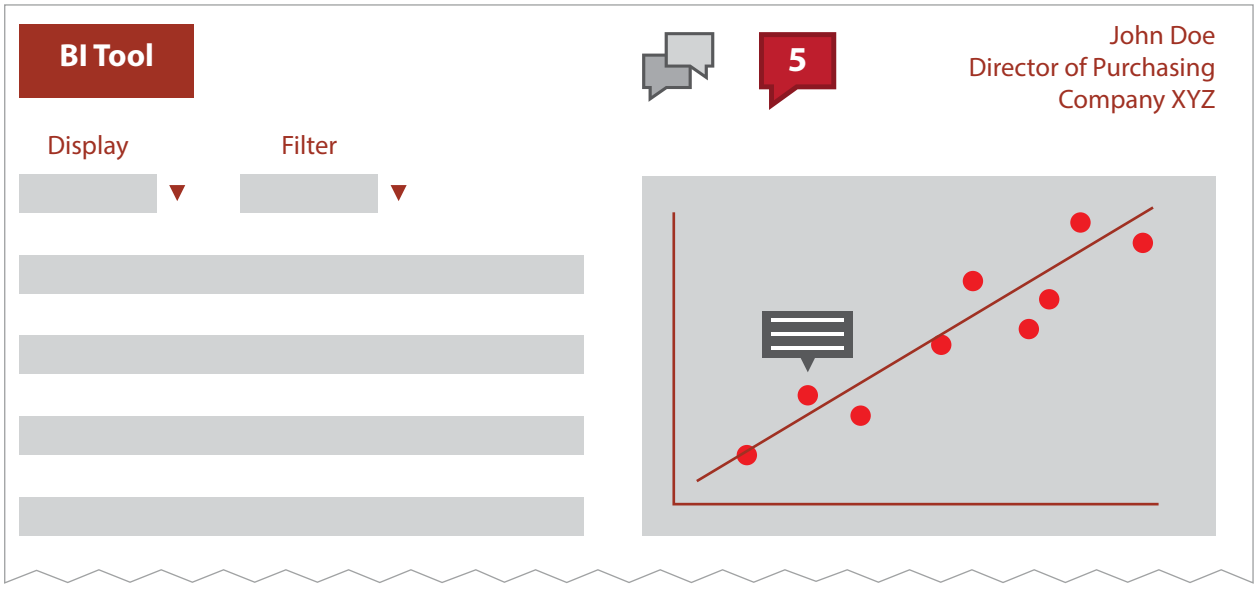
[6]Eckerson, Wayne and Hammond, Mark: TDWI Research Best Practices Report, "Visual Reporting and Analysis: Seeing is Knowing," 2011.

Strategies for Selecting a Successful BI Solution

User-Friendly Analytics Capabilities

BI tools that make it easy for any user or decision-maker to quickly sort and interpret data will provide the most value for mid-market supply chain organizations. Some SCM applications already contain embedded BI tools for analyzing data from all systems that connect to them, providing even further value through the combination of powerful automation, collaboration, and analytics. Solutions that contain these advanced functions in an intuitive, dynamic display tend to be widely adopted across an organization's users:

- **Data Sorting** – The ability to choose each criteria to display, as well as to arrange the order and combination. For example, a user could select which suppliers and corresponding details to display, such as company name, address, contact, PO number, and shipment dates, and in what order.
- **Drilling Down** – The ability to sort data according to hierarchies in order to make comparisons at a glance. For example, a user could first view the invoice totals for a fiscal year, then for a certain quarter, and then could drill down to view the invoice totals from each supplier in that quarter. Comparisons could be easily made from year to year or quarter to quarter.
- **Filtering** – A filter allows users to sort criteria using advanced logic, such as values between, greater than, less than, equal to, or not equal to a set of criteria.
- **Interactive Reporting** – Dynamic reports allow users to click on displayed results for more information, or to modify criteria in the report with the click of a button.
- **Supply Chain Access** – Web-based self-service access to suppliers and other partners in the network builds relationships, improves overall supply chain productivity, and ultimately increases end customer satisfaction.[7]



[7]Information Builders, Making Smarter Manufacturing Decisions with Business Intelligence, 2011.

Strategies for Selecting a Successful BI Solution

2. Evaluate Reporting & User Access Needs

In the past, BI tools were only used by IT professionals and other technical specialists. Today, due to the advance of user-friendly interfaces as described in the previous section, these tools are accessible to most business users of SCM applications. To best leverage the capabilities of BI tools for accurate, timely reporting, the following steps are recommended:

1. Identify which segments of supply chain software users need to generate reports and analyze data.

2. Determine the types of reports that can be configured immediately for your organization so that users can generate them on-demand. For example, standard supplier performance reports, invoice history, purchase order history, and others.

Tip: Ensure that a BI tool is configurable and flexible so users can create custom reports, define data points, and display resulting data in a variety of formats, such as bar graphs, maps, charts, or tables. It is helpful if some reports, such as financial data, can be imported and exported to spreadsheets. Ideally, a BI solution provides the ability to quickly convert analyses into printable formats.

3. Once a solution is implemented, provide training to target users. This will increase efficiency, use of the analytic tool, and ultimately provide greater insight deep into the supply chain to identify potential problems as well as opportunities.

Users

Reports

Training

Strategies for Selecting a Successful BI Solution

Dashboards

Companies of all sizes are struggling with the question of how best to use and display data in order to easily meet the needs of their business, industry, and users. Dashboards are an increasingly popular choice due to visual data representation and a host of options in the market that provide dynamic display capabilities. In fact, a recent study of companies with fewer than 500 employees[8] found that 51% currently use visual dashboards, and 55% of companies with 500-999 employees report current dashboard implementations. Twenty-three percent of both company segments plan to implement dashboards within a year.

The enthusiasm for visual analytics in the form of dashboards is due to the recognized role they play in quickly providing more data and trend insights than traditional text-based formats to a variety of business users.[9] Text-based reports and spreadsheets tend to obscure key issues and trends with an overload of tabs, columns, numbers, and text. Dashboards, in contrast, provide an "at-a-glance" image that delivers easily comprehensible trend and issue information. Over time, it gets easier to see where the trends are headed, so decision-makers can spot critical issues and problem areas – and respond to them – far sooner than if they were waiting for weekly, monthly, or quarterly reports and crunching the numbers after the fact.

Criteria to consider when selecting a BI dashboard solution include:

- The ability for a variety of users – from executives to business analysts to the shop floor – to access and create reports tailored to the data they need to analyze to make decisions related to their job function.
- Standard, customizable reports and views secured to the right level of information access for each user.
- Self-service capability for users to create custom reports from scratch based on any data criteria available in the supply chain system.
- Interactive capabilities so the dashboards are dynamic. Users can update results using real-time data, or change the filter criteria displayed with the click of a button.
- Clean, simple design to keep information easy to understand and prevent overload.
- The ability to export graphic data to a table format.
- The ability to easily share dashboard views with external vendors and suppliers.
- Mobile device access for smartphones and tablets.

Read more about supply chain dashboards here:
7 Key Features of Effective Supply Chain Dashboards

[8]Forrester Research, Inc. *Forrsights Spotlight Intelligence and Big Data*, 2012.
[9]Eckerson, Wayne and Hammond, Mark: TDWI Research Best Practices Report, "Visual Reporting and Analysis: Seeing is Knowing," 2011.

Strategies for Selecting a Successful BI Solution

3. Assess Volume Expectations

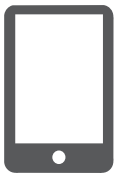
In the past, the task of data analysis was largely "owned" by specialized personnel, typically in IT, which had access to complex programs that were too cumbersome for the average user to quickly learn and incorporate into daily operations. Fortunately, the recent convergence of trends such as cloud, mobile, and user-friendly enterprise software GUIs has made it possible for most medium-to-large companies to implement data analysis and reporting applications across the enterprise.

Currently, the most successful companies differentiate themselves by adopting a data-driven culture where all employees have access to appropriate levels of information. These companies have evolved from a decision process based on experience and instinct to one based on verifiable, real-time information. Recent research has found that data-driven companies, for example, were 5% more productive and 6% more profitable than their direct competitors.[10]

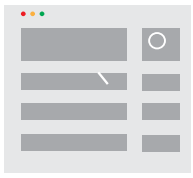
While this kind of culture and success has until recently been accessible only to larger corporations, the influx of mid-market, packaged BI offerings now provide opportunity for these organizations to implement a powerful solution without the expense or complexity typically required by Tier I companies.

Make sure that your current and future data volume requirements will be met by the BI solutions you plan to assess. Streamlined data integration, as discussed in the next section, will assist analytic databases with handling large volumes of data. Look for analytic applications with a beginning data volume of at least several terabytes. As long as the current volume capacity meets, or preferably exceeds, your current supply chain data volume intended for BI, the most critical consideration then becomes *scalability*. Due to the predicted exponential increase in data volume over the next decade, this is an absolute necessity for any BI application so that performance (speed of data loading) is not adversely affected over time.

Cloud



Mobile



Software GUI

[10]TechTarget, *Leveraging Data for Competitive Advantage*, 2013.

Strategies for Selecting a Successful BI Solution

4. Determine Data Integration & Security Requirements

Although this strategy appears after the first three, it can actually be the most critical factor for ensuring success of a BI solution, depending on the complexity of an organization's systems and the level of security needs. The top IT challenges many organizations face when defining a BI strategy are data integration, managing data quality, and managing data security.[11]

Data Integration

When BI solutions use integrated data to provide a single version of the truth, users across the manufacturing enterprise gain access to accurate information at the right time, enabling consistent and efficient operations and fulfillment.[12] Companies increasingly face the need to integrate supply chain data from various systems such as multiple ERPs or division/ department databases (due to M&As or company growth). The best integration method for each company will vary based on specific requirements, but a data integration layer that accurately maps fields for supply chain operations is a critical prerequisite for harnessing the best value from a business intelligence application.

Read more about Data Integration here:

[11]IDC and Computerworld, *2013 Business Analytics Survey*, June 2013.
[12]Information Builders, *Making Smarter Manufacturing Decisions with Business Intelligence*, 2011.

Strategies for Selecting a Successful BI Solution

Data Security

Data security is the biggest concern to most organizations when determining how to share information across the enterprise and with external vendors and suppliers, often analyzing information using web-based tools and applications for better performance. This is especially true with cloud and mobile deployments. Unfortunately, this concern can lead companies to resist implementing BI tools or maximizing their use of data sharing.

Yet that cloud-based application security continues to improve, and recent research suggests that data security in the cloud can often exceed security provided by individual companies hosting their own data. Cloud data storage vendors are dedicated to continuous monitoring, security assessments, and robust staffing for instant response to install patches or address any other problems that arise.[13]

For companies with larger budgets and more time to implement, but still hesitant about cloud security, a private cloud accessible only by one organization's supported users may be preferable, despite the additional cost. Hybrid deployment solutions provide the ability to keep the most sensitive company data on-premise, while hosting some features such as supplier web portal access in the cloud. Note that any on-premise deployment, however, requires internal IT capabilities to manage; this solution also tends to have much higher TCO and longer time to implementation. However, if your budget allows it and you have greater complexity requirements than smaller firms for which a packaged solution will suffice, hybrid applications often allow deeper customization in addition to heightened security.

[13]Fields, Elle. Tableau Software. *Why Business Analytics in the Cloud?* June 2013.

Deployment Method & Strategies for Lowering TCO

According to a recent survey,[14] 45% of organizations that implement analytics tools achieve quantifiable benefits within six months. In order for a growing mid-market company to fall into that statistical category, it is imperative to consider the right deployment method and other considerations for lowering TCO in order to get the greatest ROI. Supply chain executives must weigh the best options for their specific business processes, but all mid-market companies will benefit from choosing a BI solution with these key features:

- **Ease of installation**
- **Fast implementation**, including standard report templates for **"out-of-the-box" functionality**, as well as the ability to quickly create and **customize** new reports
- Ability to quickly add new users, for **scalability** and **flexibility** as a company grows or personnel changes
- **Powerful but user-friendly** administration tools for easy IT configuration changes that do not require vendor intervention or service/support requests

In the present market and for the foreseeable future, both cloud deployment options and the ability to perform BI tasks on mobile devices are critical necessities for an affordable, successful data analysis strategy.

Cloud

In the past year, cloud-based BI solutions have hit the mainstream, and the number of providers continues to increase. The appeal of cloud deployment to growing mid-market companies on a limited budget is twofold, since it drastically reduces:

- hardware and software maintenance costs, which are absorbed by the vendor[15]
- total cost of ownership (TCO) by charging a monthly subscription fee, typically based on number of users or number of transactions. This payment strategy helps mid-market supply chains to spend 40% less on cloud BI, per user,[16] by eliminating hefty upfront software licensing costs and by providing predictable costs for budgeting purposes.

There are some limitations to cloud deployment, including security issues discussed in the previous section. Depending on a company's data volume and security requirements, other options such as a private cloud or hybrid deployment may be preferable due to the combination of increased security of on-premise data while retaining some of the lower costs associated with a cloud solution.

[14]IDC and Computerworld, *2013 Business Analytics Survey*, June 2013.
[15]Eckerson, Wayne/Business Applications and Architecture Media Group, *BI in the Cloud: BI Leadership Benchmark Report*, September 2013.
[16]Fields, Elle. Tableau Software. *Why Business Analytics in the Cloud?* June 2013.

Deployment Method & Strategies for Lowering TCO

Mobile

Researchers have predicted that by 2015, organizations will spend $7.6 billion annually on creating or adapting business processes for mobile users.[17] Mobile access to BI analytic capabilities is a mission-critical function in modern organizations that must provide access to its predominant users: executives (67%), department managers (61%), sales representatives (48%), or operations managers (43%).[18] These mobile users require access around the clock from anywhere, whether on the shop floor, in the field at a customer site, on vacation, or at a supplier site in another city, region, or country.

Often, the added value of a mobile application is that it simply gives users the ability to accomplish work outside the confines of traditional weekday office hours, and this increased flexibility translates to greater efficiency and productivity. For these reasons, adoption is strong and on the rise: in fact, the mobile BI adoption rate is higher than that of traditional BI applications in 58% of companies.[19]

Mobile BI is a cost-effective strategy for mid-market companies who have adopted a BYOD (Bring Your Own Device) policy regarding mobile devices, since users incur the hardware costs. Mobile BI application deployment is faster and quickly adopted by users clamoring for mobile analysis capabilities.

Most, if not all, current BI tools have mobile capabilities for viewing and working with company data from tablet (or even smartphone) devices, yet each application has strengths and weaknesses. Before deciding on a particular solution, ensure that your potential tool provides the mobile capabilities appropriate for the user needs in your network.

[17]TechTarget, *Business Information Magazine*, August 2013.
[18]Eckerson, Wayne: TechTarget. *Insights on the Run: Best Practices in Implementing Mobile BI*, November 2012.
[19]Eckerson, Wayne: TechTarget. *Insights on the Run: Best Practices in Implementing Mobile BI*, November 2012.

Deployment Method & Strategies for Lowering TCO

When scrutinizing potential BI solutions for your supply chain, check for a mobile version that is:[20]

- built with responsive capabilities to detect the device being used and display correctly
- touch-optimized for mobile devices for maximum interactivity
- simplified from the desktop display for clear viewing on a smaller screen, with fewer legends, filters, and views
- easily searchable by several filter criteria, so users can quickly find the information they need while on-the-go
- high-level at first for users with less time, providing the ability to drill down into specific pieces of data
- fast to upload and refresh using mobile networks or wireless internet
- secure according to your data security and identity authentication requirements. Browser-based mobile applications provide superior security to native apps, but require network access. Native apps can run offline and provide faster performance. For these reasons, hybrid mobile applications are a popular choice, providing security via login authentication. Additionally, IT administrative tools for mobile data management (MDM) provide the greatest control over the security of all enterprise mobile applications.

[20]Fields, Ellie: Tableau Software. *5 Best Practices for Mobile Business Intelligence*, June 2011.

Conclusion

The global, networked economy operates non-stop, every day of the year. Combined with the accelerated pace of doing business, the exponential increase in data quantities and types, and consumer expectations of rapid fulfillment, selecting and implementing a BI solution is a mission-critical imperative for supply chain organizations who want to stay competitive. The size and scope of the solution will vary widely, depending on the business needs of each organization.

However, many growing, mid-market supply chain companies share the goal of being able to quickly and easily access and interpret data for better strategic decision-making and competitive advantage. A host of recent research supports the ability of BI solutions to accomplish this. In a recent survey of more than 2,200 end users from 26 BI vendors,[21] these benefits were reported:

- More than 85% said their BI solution provided the means for better decision-making abilities
- Approximately 80% reported that the BI solutions provided proven benefits of faster and more accurate reporting, analysis, or planning

With these targeted results in mind, the best BI tool for any company is:

- **Easy** for all business users to access and use
- **Implemented quickly**, with a **scalable** architecture to allow for 3-5 years of business growth
- **Efficient**, saving time and labor to produce requested data and reports in a variety of formats
- **Visual**, equipped with dashboards and **dynamic flexibility**

Take Supply Chain

For more than a decade, TAKE Supply Chain has been selected by leading companies across the globe for solutions that deliver increased accuracy, visibility and responsiveness across their supply chains. We offer robust collaboration and data collection solutions that leverage existing and emerging technology to support the increased challenges of expanding global supply chains. Together with our customers, we are regular recipients of supply chain industry awards for technology, value and innovation.

[21]Compare Business Products, *Selling Management* on a New BI Solution.

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