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Gleansight Deep Dive

How Small to Midsize Businesses Can Win with Fast, Affordable, and High-Performance Analytics

Small to midsize businesses (SMBs) have many of the same analytic needs as their larger neighbors. The Gleanster benchmark report on Business Intelligence (BI) revealed the top reasons that top performing companies implement BI solutions: "to make smarter, more timely business decisions," "to identify new revenue and growth opportunities," and "to reduce operational costs and waste." Is there any business, large or small, that would not view these as key goals?

The idea of business intelligence and related disciplines such as data warehousing and the creation of focused data marts has long been to tame the sprawl of data across different systems and to make a consolidated, consistent and insightful view of it available to analysts and managers through self-service tools. Yet doing this in a systematic way can be a huge, never-ending effort. Some large companies have entire staffs and banks of servers devoted to cleansing and reconciling data, while experts are employed to create and refine "cubes" of data extracted from operational systems and optimized for analysis.

However, not every business has the need, the desire, or the ability to embark on such an extensive and expensive effort. Even the largest businesses often find that the most tangible return on investment comes from using relatively inexpensive tools that consolidate data on the fly and present it in a visually meaningful way.

> "The most tangible return on investment comes from using relatively inexpensive tools that consolidate data on the fly and present it in a visually meaningful way."

A recent report from the Data Warehousing Institute ("Self Service Business Intelligence: Empowering Users to Generate Insights," 2011) suggests that businesses of all sizes are turning to self-service tools, particularly those that incorporate visualization and other advanced user interface techniques to achieve greater ease of use. This is partly a response to stretched IT staffs that cannot keep up with the demand for new reports and analysis. The top reason for adopting these tools, cited by 65% of respondents in that study, was "constantly changing business needs." In other words, today's business needs don't always match the capabilities of yesterday's analytic database design. Business users need the ability to perform analysis that combines data from multiple sources, not just the data warehouse – even in the best run, most analytically oriented companies that have worked hardest at their data architecture.

For major corporations, data exploration and visualization tools are often used to supplement their core BI initiatives, providing a friendlier front end that builds on existing investments. For SMBs, data exploration and visualization tools may be the only BI technology they need.

Generalizing about SMBs is dangerous because even if you take one of the common definitions for company size (for example, organizations of less than 500 employees), that includes 5-year old technology startups

About the Pie Chart

The data presented in the pie chart is derived from the Q1 2011 Gleansight benchmark report on Business Intelligence. The data serves as the basis for this Gleansight Deep Dive, which provides analyst commentary related to a particular aspect of the topic. The objective is to provide additional perspective and illuminate certain key considerations regarding the implementation of the related technology-enabled business initiative.

To learn more about Gleanster's research methodology, please click here or email research@gleanster.com.

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Fast Facts

- Memory capacity on today's desktop and laptop computers lets them perform analysis that previously required a server.
- Advanced analytic tools incorporating visualization make data discovery available to a broader audience.

and 50-year-old smokestack manufacturing companies, businesses that operate out of a single location and those that have dozens of small offices strewn across all parts of the world. Some have all their key operational data in one or two systems, while others preside over a rat's nest of legacy systems and databases that came into the company through a string of acquisitions. Truly small businesses with a handful of employees may not have any data they can't easily analyze using Excel. On the other hand, small companies with big ambitions often find themselves collecting terabytes of data.

> "What analysts and analytically-minded business managers need is something that is as easy to use as Excel for ad hoc analysis but far more powerful."

Smarter, More Timely Decisions

Any business that gets beyond the mom-and-pop stage could always benefit by obtaining better answers to questions like:

- Which products and product categories are selling best?
- Which salespeople are most productive?
- Which expenses are growing fastest and why?
- What questions am I forgetting to ask or would never think to ask?
- Are there patterns in my data that will tell me something I don't already know about my business?

According to Gleanster research for the Q1 2011 benchmark report on Business Intelligence, 94% of Top Performers regard BI as a way of making "smarter, more timely business decisions." They want answers to these sorts of questions to jump off the page, or off the screen, at them. They want to be able to act quickly because they can glean actionable insights at a glance, in charts, graphs, and performance dashboards.

This is what separates effective business intelligence from basic performance reporting. Most organizations have multiple ways of producing reports in tabular form, and they may even be able to make those reports attractive and easily accessible from a web browser. But if those responsible for making decisions based on the data have to first reenter the figures into a database for further analysis, that should not be dignified with the term *business intelligence*. Yet many organizations that have invested millions of dollars into BI initiatives find themselves reverting to old-fashioned spreadsheet analysis at times because their data systems failed to anticipate all of the organization's analytic needs.

Spreadsheets are the boogeyman of BI, with consultants forever decrying the "Excel hell" that arises from emailing around spreadsheets, all of which seem to contain slightly different numbers. In contrast, BI is supposed to deliver "one version of the truth," where everyone can agree on the basic facts and instead of grappling with version control issues focus their attention on making smarter business decisions. Excel is the tool that's close to hand and can allow business professionals to create their own analysis, without depending on consultants or IT staff. That doesn't change the fact that it's often the wrong tool for the job. What analysts and analytically-minded business managers really need is something that is as intuitive and easy to use as Excel for ad hoc analysis but far more powerful.

A New Generation of Analytic Tools

Putting in place the infrastructure that enables real business intelligence is not something that can be done overnight. As depicted in the schematic in Figure 1, there's a lot that needs to happen behind the scenes, including:

- Architecting data warehouse
- Creating focused data marts
- Transforming and loading data into the data warehouse
- Cleansing, reconciling and aggregating data
- Implement master data management practices
- Designing analytic data cubes
- Designing executive dashboards and scorecards

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Today the market for data analysis is undergoing some dramatic changes. At the top end of the market, most of the traditional BI tools have been consolidated under the ownership of large enterprise vendors like IBM, SAP, and Oracle. However, new options keep opening up as companies seek better ways of analyzing their data at a lower cost.

Some of those options:

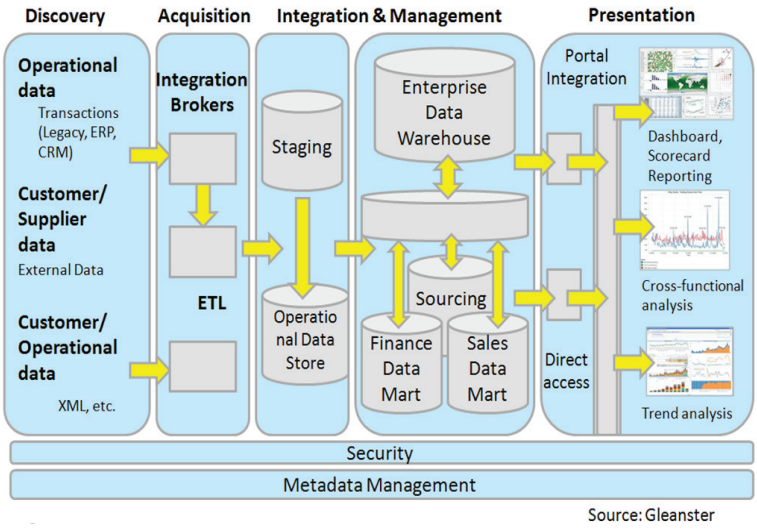
- Powerful desktop software tools for data discovery and visualization capitalize on the fact that even laptops now come with powerful processors and gigabytes of memory, meaning they can perform analytic tasks that previously required a server. The best of these tools require no more skills than Excel, yet deliver deeper insight, faster. They can pull data from existing BI systems, extract it on-the-fly from one or more operational systems, or import it from spreadsheets. The resulting analysis can then be distributed through a web portal for broader dissemination within the company.
- BI as a cloud computing service allows businesses to tap the power of analytic database servers on a subscription basis, rather than owning and operating the systems themselves. So far, the most popular use of these services is to analyze data extracted from other cloud services, such as Salesforce.com's sales and marketing applications.
- Open source products that make BI available at a dramatically lower cost. Open source licensing means you can try them for free and in many cases use them forever for free, even for commercial purposes. However, most businesses prefer to secure a commercial support agreement with the companies behind these products. Often there are other costs related to hiring employees or consultants with the skill to configure and customize these tools.

This report concentrates mostly on the rise of data discovery and visualization technology, but the cloud and open source options also deserve attention. For one thing, cloud and open source BI products increasingly incorporate data discovery and visualization capabilities. Usually, these are delivered through a web interface, rather than as desktop software, which has its own advantages and tradeoffs. On the plus side, keeping the user interface web-based with all data resident on the server keeps everyone's view of the data more consistent. The drawback is that a web-based BI system cannot be used offline, or on the plane, and the interactivity is never quite as good as with a native desktop application.

A good compromise is to provide a desktop tool for power users, while using a web portal for broader sharing. The web version of the analysis can leave room for further exploration and visualization – for example, by allowing drill-down from a map view of sales patterns on a national or global basis to a more specific view of a region – without needing to duplicate every feature available in the desktop software.

Another issue with cloud BI is data movement. If the data you want to analyze is not already

Figure 1: Business Intelligence Inputs and Outputs



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"in the cloud," you will have to upload it before you can analyze it. Some cloud BI vendors have devised clever ways of synchronizing with on premises data sources, but depending on the volume of data and the frequency with which it must be synchronized for your analysis to be useful, this still may be an obstacle. Also, transmitting data outside the corporate firewall requires a high degree of trust in the trustworthiness of encrypted connections and the security of the cloud data center. Particularly in regulated industries, security concerns often raise too many red flags for this even to be an option.

Meanwhile, open source BI is affordable for SMBs in terms of up-front cost, but traditionally makes the most sense for organizations with more in-house technical expertise. For example, companies developing their own software products or cloud services often embed open source BI products because the availability of source code is truly valuable to their integration efforts. If yours is not a technology company per se, the availability of source code may be irrelevant; what is needed is better analysis, delivered as simply as possible, not a toolkit for building analytic applications.

To be fair, some open source vendors are trying to change this perception. Instead of putting the emphasis on open source, they are selling affordability and investing in greater ease of use. Just be sure to reality-check the claims and assess whether the requisite skills reside in-house to support these products before going down the open source path.

The Need for Speed

According to Gleanster research, many of the reasons Top Performers implement BI in the first place have to do with speed. They don't just want analytics, they want *fast analytics*. If the goal is to make more timely business decisions, you don't want to wait weeks or months for the IT department to produce a new report or dashboard with the information you need. Speed is a recurring theme:

- 85% of Top Performers use BI to "make timely course corrections, when necessary"
- 82% of Top Performers want BI to help them "identify competitive threats and risk factors" (sooner rather than later, presumably)
- 72% of Top Performers (compared to 62% of Everyone Else) want BI to help them "reduce time-to-market of new products and services."

> "A high-performance analytic system that takes two years to architect, customize, and deploy will not do much good if the company goes out of business in the meantime."

Speed comes in many forms. IT professionals talk about the performance of an analytic system in terms of how quickly it can process a large volume of data and produce a report or update a dashboard. Speed of implementation is another key factor. A state-of-the-art system that takes two years to architect, customize, and deploy will not do much good if the company goes out of business in the meantime. Ideally, people need to be able to learn to use the analytic software quickly. The more business managers and their staffs can conduct the analysis themselves, the faster they can ascertain the answers they need.

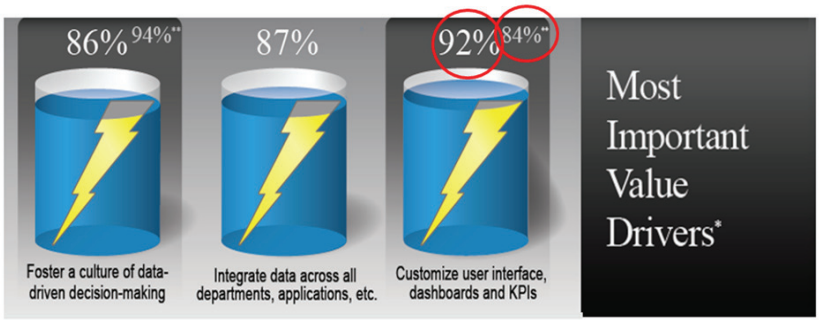
Data discovery and visualization tools lend themselves to faster results because they do not presume that every important business question has already been identified and made available in a report, fed by a data warehouse optimized to answer those specific questions. Reality is often sloppier than that. Consider: You've just acquired a company and your board wants to see a consolidated view of sales that includes those operations. Chance are, they want that information now, not two months from now, after the conclusion of an IT-led data integration and cleansing operation.

While discovery and visualization tools can provide a shortcut to effective analytics, they don't eliminate the need for data management on the back end. Taking short cuts means taking risks. Quick-and-dirty analysis can produce better results than more systematic analysis that takes too long, but when you play

Fast Recommendations

- Take advantage of existing BI infrastructure, where available
- Direct access to operational databases where necessary
- Seek out tools for rapid analysis of multiple data sources, with the intelligence to do some of the analytic work for you
- Use visualization to "see" your data, rather than trying to find patterns in rows and columns
- Measure success by the speed of access to information and the quality of decision making

Figure 2: Maximizing the value of the BI investment



** According to Top Performers, based on 211 Qualified Survey Responses to the Q4 2010 Gleanster survey on Business Intellige*

*** According to Everyone Else, shown only when a notable disparity occurs relative to Top Performers*

with power tools there is always the possibility that someone will get hurt. Analysis done by someone who doesn't understand the data may result in analysis that misses the point or is dead wrong. Skipping the data cleansing steps associated with data warehousing and traditional BI means running the risk that the analysis will be distorted by inaccuracies. These risks may be large or small, but in order to manage them you need to be aware of them.

If you are alert to the risk of errors in your data, visualization tools can make the existence of errors glaringly obvious. If you see a huge spike or dip in sales, inventories, or other important metrics, and the data turns out to be erroneous, do whatever needs to be done to eliminate those errors at the source. Systematically whittling away at errors in data entry and data collection may be the best "data cleansing program" you could have.

Ultimately, every organization needs to invest in improving its data management, but the question is how much to invest in making it perfect. For small organizations in a hurry, data discovery and visualization tools provide a way of getting more value out of whatever data they have. Given the choice, making decisions based on data, even imperfect data, is far better than making them blind.

Value Drivers for SMB Analytics

For any IT solution, there are those who use it more effectively or less effectively. Gleanster defines "value drivers" as the strategies and practices that make the difference in terms of maximizing the value of the investment. For the most part, the top value drivers identified by Top Performers (as shown in Figure 1, which also indicates the disparity relative to Everyone Else) apply to organizations both large and small. However, we can provide some commentary about how some of these might be interpreted differently for different sized organizations and different technical approaches.

A few key points:

- When it comes to customizing the user interface, dashboards, and key performance indicators, it's important to have a unique view of the data specific for your business and the KPIs that really matter for the performance of the business. SMBs need this as much as everyone else, but they also need to hold down the cost and complexity of accomplishing it.
- Organizations that are younger or smaller might not find the need to integrate data across departments and applications to be as critical, to the extent that their operations are less distributed and complex. But data integration for an organization-wide view is ultimately a "need to have" rather than a "nice to have."
- The best analytic technology in the world won't count for much if managers still trust their gut instinct more than they trust the numbers. Possibly, those who are not Top Performers see the need to foster a culture of data-driven decision making as more critical because they find it harder to achieve, whereas Top Performers have achieved it to a greater extent. If the organization is making analytics readily available to managers for the first time, it may be necessary to emphasize this culture change more than would an organization that has stressed data-driven decision making for a long time.
- Implementing a process for continuous data quality improvement was cited by 82% of Top Performers. Even if the organization chooses to take a tactical approach to data analytics that emphasizes discovery and visualization technologies, it still must

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pay attention to identifying data quality issues and improving quality over time.

- Demonstrating improved planning and operations outcomes was emphasized by 79% of Top Performers. Particularly if the organization is making substantial investments in BI technology, it will need to demonstrate a return on investment. Lowering the cost of the investment can lower the pressure to produce an immediate return while also improving the odds that you can show hard dollar ROI.
- Implementing a formal KPI methodology such as the Balanced Scorecard or Six Sigma was important to 74% of Top Performers (compared to 63% of Everyone Else). This reflects the fact that these formal methodologies produce results. However, they may be overkill for smaller, less bureaucratic organizations.
- Implementing a process for continuous analytic improvement was cited by 72% of Top Performers. Continuous improvement is valuable for any size organization.
- Implementing employee training on BI tools was cited as a success factor by 69% of Top Performers. The best data discovery and visualization tools require relatively little training, but offering an afternoon class or access to online seminars will improve their effective use.
- Implementing alerts and notifications, rather than merely providing access to dashboards and reports, was cited by 66% of Top Performers. In other words, it's better to configure data systems to alert the warehouse manager the minute a looming out of stock condition on an important supply is detected, rather than relying on him to see that concern crop up on the next weekly report.

Challenges for SMB Analytics

The challenges for any sort of business intelligence or analytics initiative are as much cultural as technological. This is reflected in the research finding, with 78% of All Companies citing "getting managers to use data over 'gut instinct' decisions" as an obstacle. The most valuable insights that data analysis can provide are often the most counter-intuitive – the one that points to an unexpected opportunity to increase sales, cut expenses, or create a new product or service that serves an unmet market need. An unexpected result deserves to be questioned, to the point where it becomes certain that it's not based on faulty data or a flawed analysis. What should be avoided is the smug "I know better" attitude that has been known to blind managers to genuine opportunities.

> "The challenges for a business intelligence or analytics initiative are as much cultural as technological."

According to Gleanster research, the top challenge (91% of All Companies) lies in breaking down data and departmental silos. It might be reasonable to expect that to be a smaller challenge for smaller organizations, except that experience teaches us that databases and managerial fiefdoms proliferate in organizations of all sizes. There are really two issues here: technical access and organizational data ownership. Of the two, the technical issue is easier to solve. Given the right strategic need, you can put the effort into consolidating and cleansing data in a data warehouse or data mart. Meanwhile, we've been talking about how the latest self-service BI, discovery, and visualization tools can stitch together data from multiple sources on demand.

However, the technical solutions only work with permission to access the relevant data sources. If a marketing analyst wants to merge supply chain and sales data, and the supply chain organization refuses to grant database access to analytic applications from other departments, that initiative will stall pending a ruling from some higher power.

According to Gleanster research, 88% of All Companies view the need to achieve acceptable data quality as a major obstacle. We have discussed here how working around formal data warehousing and data cleansing processes and instead pulling data directly from operational databases can make tactical sense. Nevertheless, data quality has to be a long-run strategic priority if the goal is high-quality actionable analysis.

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Measuring Success

The greater the investment in BI technology, the greater the expectation of provable return on investment. If you can hold down the cost by exploiting relatively inexpensive data discovery and visualization tools, you may be able to take some of the pressure off – but you still ought to know whether you are achieving business results.

Gleanster research suggests that Top Performers are focused on metrics tied to business outcomes such as time reduction, cost reduction, and revenue enhancement — metrics that are closely linked to overall business performance, even though the impact of BI implementation on shareholder value can be hard to measure, especially in the short-term. By contrast, Everyone Else is paying more attention to usage metrics, which are easy to measure but reveal less about whether the business is realizing tangible value, and to what extent.

As an example: 87% of Top Performers regard reducing "time-to-decision and time-to-response to information requests" as the best way to judge the success of a business intelligence initiative, whereas only 78% of Everyone Else put the emphasis there – instead paying attention to metrics like system usage (84%) and number of active users (83%).

Should anyone care if the people in their company are not making better, faster decisions as a result of having implemented the software and invested the time and resources in training employees on how to use it? For every company, no matter the size, the answer should be a resounding "yes". The underutilization of any tool that makes it possible to glean new insights from the mountains of data at a company's disposal represents missed opportunities that, in the long run, could have a dramatic impact on the health of that company.

Key Takeaways

- While data warehousing and data cleansing initiatives have many benefits for data quality and analytic application performance, many organizations lack the resources to invest in them. Even organizations that make the investment do not necessarily capture all the data needed for every analytic need. BI tools that emphasize connectivity to multiple data sources, together with discovery and visualization tools, can help fill in the gaps.
- Organizations get the most value from analytic applications that are customized to the needs of key decision makers – or that are easy enough to use that those decision makers can get the data they need themselves.
- Self-service BI tools that incorporate data discovery and visualization lower some of the barriers to better use of data. However, they do not wipe away all the challenges associated with effective business intelligence, particularly the organizational ones that may exist when data ownership is distributed.
- The payoff from effective business intelligence should be a measurable increase in the speed of access to information and the quality of decision making.

Ultimately, there is more than one right answer for how to analyze a company's data. Sometimes, Excel is exactly the right tool for quick number crunching. There are other analytic problems for which only an ambitious data warehousing effort makes sense because of the volume of data and/or the number of sources. In between lie the majority of cases wherein there's a choice of which approach to take. For companies with limited resources and patience, data visualization and discovery are worth considering as a shortcut to driving better business performance and increased business value.

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