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The Two Types of Business Intelligence

What they are, why they're needed, and how "Operational BI" works

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Executive Summary

What kind of information does an organization's employees need in order to perform their jobs to the best of their ability?

Generally speaking, executives and managers are looking to gather **strategic** information, analyze it, temper it with their own knowledge, and then make what are often wide-reaching decisions.

Nonmanagerial staff, on the other hand, most benefit from **task-specific information**, details that will help them perform individual business operations in the most efficient manner possible.

Two different groups, two different types of information.

Both groups in need of business intelligence (BI).

So why is it that over 65% of all organizations have implemented only **strategic** business intelligence solutions, effectively helping their executives and managers but leaving everyone else out in the cold?

This paper discusses the origins of business intelligence, how it started, and why almost immediately it became the exclusive domain of an organization's management. This paper also details the need for "operational business intelligence," including the unique capabilities offered by this kind of BI solution.

Business Intelligence: Origins

Business Intelligence has been around for many years, but it really didn't hit its prime until early in the 1990s. And the BI term came about less because of what it enabled an organization to do—anyone reviewing a report was involved in "business intelligence"—and more because of the technology it represented.

In a nutshell, standard reporting and analysis applications were not classified as BI. Business intelligence applications were defined as interactive, graphic solutions that allowed a user to "drill down" into and "slice and dice" the underlying data. And that's when everyone assumed that BI was a "strategic" analysis tool.

Consider the above kind of technology.

- Interactive
- Graphic
- Drill-down

Now ask yourself the following question:

"What people within our organization would we want to give access to a solution like that?"

Answer: Managers and executives.

For one thing, high-level business analysis is typically done by managers and executives, whether it's your CFO, sales manager, or even your CEO. These are the people who are responsible for making "big-picture" decisions within an organization, and clearly the better their ability to analyze business activities, the better the decisions they're likely to reach.

So, business intelligence software became one of the hottest commodities for software vendors to sell and for customers to buy. BI solutions might not have been among the most affordable solutions available, but as they were targeted toward executives and managers, their price tag was easily justifiable.

And, even though BI solutions were completely dependent on a user's own initiative to access, analyze, and drill down into the desired information, managers and executives typically had the time—and the responsibility—to do so.

BI software offered a **strategic** solution to a specific audience, and it was a good fit.

Until, that is, organizations tried to redefine the audience for BI solutions.

Business Intelligence: The Evolution

Well past the 1990s, the only employees who were deemed worthy of business intelligence were managers and executives. After all, BI solutions were designed to give strategic, "big-picture" information to the people within an organization who were tasked with making big-picture decisions. Normal staff members were not tasked with such responsibilities.

Moreover, everyday staff members were typically not allocated "analysis time"—that is, hours spent every week in analyzing business activities. A nonmanagerial employee who spent time performing some kind of interactive analysis would necessarily be taking time away from expected everyday tasks. And that was just unacceptable.

But the potential value of business intelligence beyond management could not be ignored.

And so sometime after the year 2000, organizations began to wonder whether business intelligence solutions had value to offer staff other than managers and executives. Organizations began to speculate that if a BI solution could offer a **manager** intelligence on what products to promote in the next quarter, why couldn't a BI solution also offer a **nonmanager** intelligence such as when it made sense to transfer a specific product from warehouse "a" to warehouse "b"?

And so the age-old concept of the users and uses of business intelligence software began to change. And therein lay the challenge.

The BI software provided to managers and executives was interactive, extremely flexible, and provided output in a drill-down, slice-and-dice graphic format.

Now this "interactive slicing and dicing" offered by traditional, strategic BI solutions took time, but that was acceptable when that time was being spent by managers and executives. After all, these are the very people whom you **hired** to do this kind of analysis; they have the **experience** to know what to look for, and the **time** required to look for it.

But that's **not true** for **nonmanagerial** staff.

Nonmanagerial staff were hired to perform a litany of daily tasks; chances are that their day is fully occupied doing so. And for this group of your employees, a job well done does not consist of analyzing big-picture business trends, but rather consists of completing small-picture tasks **in the most efficient way possible**.

And so in 2008 the term Operational Business Intelligence (OBI) was created as a complement to the traditional Strategic Business Intelligence that everyone was already familiar with. Same general concept—providing needed information to the right people—but—**using very different underlying technologies**.

What You Do Know Vs. What You Don't Know

In addition to the difference between their audiences, strategic versus operational business intelligence has another important differentiator.

When managers and executives use a strategic BI tool, they typically have a good idea of what they wish to analyze—sales figures, customer service stats, and so on—but they typically **don't** know what the results of their analysis will be. Their analysis could show that a certain product isn't being sold as much as they thought, or that a supplier ships an unusually high percentage of damaged items.

Thus strategic BI solutions are typically used by managers to discover **what they don't know**.

Operational business intelligence is different.

Operational BI is very often used to deliver **anticipated information**.

This is because operational BI focuses on standard tasks that employees need to complete. As such, an organization can in most cases look at a task and identify the information that would help an employee complete that task in an efficient manner.

Take, for example, the task of an account manager entering a new order for a customer. Most organizations would like that account manager to receive intelligence about that customer's credit status and whether he has any overdue invoices. This is a perfect example of knowing ahead of time what intelligence you wish to deliver.

Although you might not know the specific details of the intelligence to be delivered (who the customer is and his financial status), you do know the **elements** of information you want the account manager to receive.

In other words, operational BI is often used where you're able to say:

"When 'x' happens, I want to automatically deliver intelligence 'y' to person 'z.'"

And that brings us to one final differentiator between strategic and operational BI—the methods by which the corresponding business intelligence is delivered.

Autodelivered Intelligence

The most visible difference between strategic and operational BI is the manner in which the intelligence is delivered. Strategic BI needs to be delivered in an interactive manner, enabling a manager to "slice and dice" his views of data in a number of different ways. Additionally, strategic BI solutions usually focus their output on graphical displays, as charts and graphs typically better represent trends, opportunities, and problem areas.

Operational BI, however, needs to make as small a demand on a recipient's time as possible. That generally rules out information presented in an interactive manner. Moreover, since operational BI information is usually task-specific, there is less need for charts and graphs.

For instance, informing a staff member that a client is on credit hold or has overdue invoices requires no graphical display. And even in instances where graphics are valuable—such as balancing inventory between multiple warehouses—the most important information would typically still consist of just a brief message. (For example, "Item 'a' in warehouse #1 is approaching reorder point; move excess stock from warehouse #2 to warehouse #1.") So—we are now able to begin to formulate a picture of the nonmanagerial staff members who need to receive business intelligence:

- Their day is filled with process-level business tasks to complete.
- They have little or no time to proactively "look" for information that could help them complete their job in a more efficient manner.
- Graphical information is generally less useful to them than short, task-specific details.

This leaves only one question to ask—if an interactive application interface is **not** the best way for a nonmanagerial staff member to receive information, what **is** the best way to get needed information in front of them?

The answer is—via most **any** communications device.

Quite simply, when it comes to operational BI, no **single** communications medium will do. For staff who spend their days at their desks, instant message and email will probably suffice for the delivery of important information. But for on-the-road technicians and salespeople, cell phones and even Twitter™ might be more appropriate.

Thus an operational BI solution typically offers multiple information delivery methods, including:

- Instant message (also known as "screen pop")
- Email
- Cell phone/pager
- Web dashboard
- Fax
- Twitter

So—whether it's due to the differing audiences of strategic and operational BI solutions, whether it's because of the different kinds of information required by each group, or whether it's the need to deliver this information in very different manners, the requirements of strategic and operational business intelligence demand very different software solutions.

Now it's time to better understand how an operational business intelligence system works.

Operational Business Intelligence

In its simplest form, OBI is the automation of the "if–then" process (for example, "if business scenario 'x' occurs, then execute response 'y'). Unlike strategic BI, where analytical information is presented to an executive and then the executive uses that information to reach a decision, operational BI is typically designed to autoexecute one or more predefined responses once a specific business condition occurs.

Examples of OBI include:

- If a new order is placed for a client who has overdue receivables, alert the sales rep and put that order on hold.
- If an item in inventory drops to within 10% of its reorder level, automatically create a purchase order for that item and send that PO to the finance department for review and approval.
- If the variance between a project's allocated budget and its completion percent is greater than 15%, halt the project and notify finance and the project leader.

When you consider scenarios such as the above, you realize that operational BI is actually more than business intelligence—it's also process automation.

In fact, within the ERP world, one of the most common uses for operational BI is to identify newly placed sales orders and (as an automated response) generate an invoice and autodeliver that invoice to the corresponding customer.

Although this might not be what many people envision from a "business intelligence" solution, the truth is that operational BI is a unique combination of data analysis combined with alerts and workflow engines.

So let's take a deeper look into the technology behind an operational BI system.

How Operational Business Intelligence Works

Unlike executives, nonmanagerial staff need to have intelligence delivered to them in the form of:

- What has occurred.
- The response that has been taken.
- Any additional actions that must be taken.

Intelligence that is delivered in this manner does not make additional time demands upon the recipient. On the contrary—the BI solution **saves** time for the staffers: time they would normally have spent determining how best to respond to the business condition that occurred.

So—what are the components of an operational BI system? Typically, an OBI system consists of the following:

- A data monitoring component
- An information generation and delivery component
- An automated response (also known as a "workflow") component

Operational BI: Data Monitoring

The "data monitoring" component is the true BI part of this solution. The purpose of this component is to identify conditions of business data that require some kind of response. Now the response itself can be a variety of things—as simple as sending an quick alert about a condition to a member of your staff, or something more sophisticated such as resending an overdue invoice to a client and putting that client on credit hold.

Precisely what data is monitored varies from one organization to another, but typically those business conditions fall into one of eight categories:

1. **Date-sensitive conditions.** Invoices coming due, arriving shipments, pending deliveries, contracts about to expire, and upcoming appointments.
2. **Approaching thresholds.** Clients approaching their credit limit, items nearing reorder level, and projects nearing their allowable budgets.
3. **Exceptions to normal processing.** Excessive discounts, unusually large price increases, and unapproved work orders.
4. **Things that have not happened – but should have.** Customers who have not ordered, purchase orders that have not been received, and projects that have not been started.
5. **Data Integrity.** Phone numbers with an incorrect number of digits, orders missing required components, and duplicate invoice numbers.
6. **Trend Analysis.** Customers whose purchases have increased or decreased by "x" percent over a certain time period.
7. **Data Inconsistencies.** Projects that are less than 50% done but have used up more than 50% of their budgets.
8. **Data Changes.** Changes to a customer's credit limit or credit status, or changes to an item's cost or lead time.

For example, you might like to know when:

- An item gets to within 10% of its reorder level.
- A client stops buying from you.
- An item's profit margin drops below 20%.

And you might like to autoexecute some response, such as:

- When a new order is placed, autosend the customer a copy of their invoice.
- When a repeat customer has not purchased in 30 days, autoschedule a phone call.

The data monitoring component of operational BI is robust—that is, it identifies both simple scenarios (stock running low) and sophisticated ones (clients who have stopped buying).

Operational BI also supports both "aggregate" analysis (vendors with more than "x" late deliveries, clients whose orders total more than "y") as well as "value changes"—such as identifying when a client's credit limit or credit status has changed.

Most important to OBI data monitoring is that it's automated; no one has to take the time to run something manually to determine if a specific condition exists. As such, the monitoring module in operational BI typically relies on "scheduled checks" for the varied business conditions you wish to monitor. Those conditions that are more time-sensitive are checked on a more frequent basis; those that are less time-sensitive are checked less often.

Operational BI: Information Generation and Delivery

The second component of an operational BI solution is its ability to generate and deliver the needed information to the appropriate individuals. In the case of strategic BI, this is typically done through a graphic user interface—but operational BI recipients do not to have the time to use such an interface. Nor can operational BI assume that the people who need to be informed are always at their desks.

Depending on the task at hand as well as the people needing to be informed, the content delivered by an operational BI system could vary greatly, such as:

- A short text message to a staffer's mobile device.
- An invoice to a customer.
- An A/R Aging report to an accountant.

And so an operational BI solution can generate intelligence in varying degrees of detail, including the ability to conform to an organization's standard forms, documents, and reports.

From an OBI solution perspective, this means the following:

- Alerts that can include a virtually unlimited amount of data, including access to any fields of data from business applications
- The ability to "compress" or "expand" the amount of data that is included in a single alert

  For example, an OBI process that monitors customer work orders might send each customer one message for **each order**. However a salesperson would probably get one message showing **all of their customers' orders**, while a sales manager might prefer one message containing the details of **all work orders**.
- Support for multiple email systems (for example, Microsoft Exchange, Lotus Notes, Gmail), and multiple message formats (such as plain text and HTML)
- The use of industry-standard reporting solutions (for example, Crystal Reports™ or Microsoft SQL Reporting Services™) to generate standard forms and documents
- Multiple device delivery—including email, fax, cell phone/mobile device, screen pop, web browser, and social networking (such as Twitter and Facebook)
- "Follow-me" alerts—the ability to specify different delivery addresses based on time of day, day of the week, holidays, and more

Operational BI: Automated Response

Where an operational BI system really differs from strategic BI is that whereas a strategic system presents intelligence to a manager and leaves the decision-making to him, an operational BI system allows you to build a response right into the OBI solution itself.

For example:

- If a client has more than "x" dollars in overdue invoices, put him on credit hold.
- If a customer who buys every month has not purchased within 30 days, schedule him for a call by his account manager.
- If an item drops to within 10% of its reorder level, create a purchase order for that item and send the PO to a manager for approval.

Some people refer to this as "automated response," some refer to it as "workflow," and still others call it "triggered actions". Regardless of how you describe it, the most typical kind of automated responses in operational BI solutions are application data updates—as in the three previous scenarios.

But when it comes to application updates, it's rare to find any two applications that are updated in the exact same way.

Considerations such as what application programming interfaces (APIs) a specific software solution supports, as well as the type of database used by those applications (for example, Microsoft SQL Server™, Oracle™, Foxpro™) often require that different update methods be used.

Generally speaking, an operational BI solution supports multiple methods for updating information in application databases. These methods often include:

- The execution of SQL "insert" and "update" statements.
- The running of executable programs.
- The generation of XML.
- The submission of Stored Procedures.
- The ability to create "export files".
- The execution of Visual Basic scripts.

This is often the one area where the implementation of an operational BI solution requires programming expertise. Thus if you're interested in configuring OBI events that perform data updates, make sure you understand how those updates are to be performed, and make sure you have access to the corresponding technical expertise required to make it work.

Summary: Everyone Deserves Intelligence

There's no question that there are some software solutions that should be restricted to a small group of users within an organization. Considerations such as access to sensitive information, required technical expertise, and departmental responsibilities are all valid points when debating "who gets their hands on what."

But sometimes we let the **form** of a technology erroneously restrict our vision of who could benefit from that technology.

And that's what's happened with business intelligence software.

Ideal for big-picture analysis and for identifying corporate strategies, the **form** of traditional BI software—its interactive nature, its graphic display, its slice-and-dice capabilities—convinces organizations that it's applicable solely to their managers and executives.

And yet the overriding **purpose** of BI software—the delivery of relevant information to people so that they may make better business decisions—in no way should exclude nonmanagerial staff. If relevant information can help an executive better reach a strategic decision, it stands to reason that comparable information can help a staff member better execute operational tasks.

The undeniable conclusion is that **all parts** of an organization can benefit from business intelligence. The type of information required by various staff members will differ. So, too, will the manner in which the information is conveyed. But if one of the keys to remaining competitive in today's markets is to enable an organization to make better and faster business decisions, those decisions need to be made by **everyone** within that organization.

Business intelligence for everyone.

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