

Business Intelligence Meets Business Process Management

Powerful technologies can work in tandem to drive successful operations

The Corporate Challenge

Whether they involve distributing goods to customers, collaborating with suppliers or coordinating the efforts of employees, business processes are the foundation on which rest a business's products, services and brands. They are the essential underpinning of an organization's ability to function. In successful companies, business processes align resources to support the achievement of goals.

Business process management (BPM) is a methodology to ensure that those processes support a common set of goals and objectives. It involves automating and/or improving the effectiveness of process activities, tasks and outcomes to accomplish particular business purposes. Its goals include not only efficiency and productivity but, beyond them, control, responsiveness and improvement. Efficiency enables individuals to maximize the time they can devote to priority business tasks and to maximize throughput. Control assures that company resources are aligned optimally to execute strategies. Responsiveness and improvement support the competitive differentiation that enables a company to excel over others.

BPM, then, is about improving processes and implementing systems that enable the improvement. In pursuit of this mission, BPM starts with the following assumptions:

- As a business changes, so must its processes; as a result, they need to be revisited periodically.
- Processes are used by multiple organizations and stakeholders.
- Processes interact with systems and people. Those people can be employees, customers, suppliers or other stakeholders.

To attain the process goals of efficiency, productivity, control, response and improvement, companies first must understand their processes, the needs and skills of the people who use them, the changes that affect them and which areas need improvement. To understand these things, they need relevant information and the ability to analyze and apply it. Business intelligence (BI) tools provide this information, its contexts and appropriate

analytics. BI delivers information that, when linked with BPM, gives people the input they require to improve business processes.

This last point is key: Both processes and tools are subordinate to the end of empowering people, at whatever level they occupy, to make informed business decisions that execute corporate strategy, improve performance and ultimately produce the best possible results.

Separation Inhibits Decision-Making

To benefit from improved process management and decision-making, however, companies first must bring together these two business enablers. Most organizations use BI and BPM technologies to serve separate purposes that seldom overlap. For the most part, BI deployments don't focus on process, and BPM technology doesn't provide metrics or an aggregate view of business. This situation reflects the predominant view that these are different technologies that each stands alone, delivering value to the business each in its own way.

This view is shortsighted, and soon it will be antiquated. Dynamic enterprises are beginning to forge links between processes and data, particularly in the areas of operational BI and decision-intensive processes. They are linking these two seemingly incompatible technologies in three distinct ways.

First, when initially implemented, most processes are sketchily defined. BI can generate analytics that help analysts tune the process to serve its purposes better. For example, process analytics can calculate measures such as the average process cycle time, durations of individual activities and time lapses between activities. Typically, BI used in this way will report on data about both transactions and process instances. This data becomes post-process feedback that can guide the process of tuning.

Second, most business processes manage the flow of data through an organization and involve decision points at which human interaction is required. For example, sales order processors need to obtain account approval before orders can be fulfilled. Business intelligence coupled with enterprise business process management can place the right data in the hands of the right users exactly when they must make a decision.

Third, many business processes are kicked off by information generated from BI. For example, trade promotion managers use BI to track the effectiveness of promotional activities. Their measurements help shape the next steps of the process. If the activities prove ineffective, managers can act to create more awareness or decide to bring the promotion to an end. In any case, decision-makers initiate the chosen business response process based on the

BI information. The inputs gained through BI and BPM empower groups and individuals to execute strategy effectively and streamline tactics.

BI Sharpens Business Processes

The ultimate goal of business process management is performance management: managing the performance of the organization and its business network by using all assets in ways that achieve a common set of goals and objectives. Performance management enables all individuals to work across strategic, tactical and operational levels to align actions so that the organization produces rapid, effective responses to business challenges.

To connect processes with performance goals, companies need business intelligence capabilities, including metrics, key performance indicators (KPIs), executive dashboards and advanced reporting capabilities. They must go beyond just providing reports of basic operational metrics to facilitating access to aggregate data definitions and real-time information. Without BI, it is impossible to correlate process outcomes to corporate performance goals or to apply operational metrics to continuous process improvement.

BI is also a critical tool for analyzing process data. Without it, it's virtually impossible to measure, evaluate and control business processes. Through process performance reports, BI gives business process managers the means to measure process execution as well as to gain insight into future workflow design improvements. BI tools map out process metrics such as throughput and flow rates in process modeling and then can be used to measure actual process execution. This data can be aggregated from the process implementation and displayed in real time in performance dashboards and reports.

Like corporate performance management systems, BI in a BPM environment supports high-level strategic metrics as well as drill-down analytics and sends alerts when process performance results begin to deviate from targets. In addition, by providing a platform for rule-triggered actions, BI can turn alerts into automated procedures for escalation and remediation in real time, allowing the organization to respond without delay to changes in the business environment. Ultimately, statistics distilled from actual operations can be fed back into the process model to begin the next cycle of performance improvement.

In many cases, business data is far more important than process data for analyzing and optimizing business processes. BI is the critical element of BPM here. To use the example of the mortgage loan approval process, the real-time value of credit scores is critical data for calculating the loan interest rate

to be offered. In this situation, integrated business intelligence data is the major ingredient to support key decisions in the process.

BI is also critical to BPM because day-to-day business decisions must be made in the context of business process. BI not only harnesses the power of transactional data created by processes but also creates understanding that leads to action. Order fulfillment is an example of this intersection. In such a case, BI helps make these and other decisions:

- Should we process this order even though it exceeds the customer's credit limit?
- Should we escalate this order to the regional sales manager because the credit score is low and this customer is a priority client?
- Should we extend more credit to this customer even though he or she has outstanding payments?

These key processing decisions cannot be made efficiently unless the data from each application and each process is incorporated in a BPM application. Integrating process and data on a readily available platform enables decision-making in context and in real time.

Integration of BI and BPM also addresses an issue in the relationship of enterprise software to business processes. An application represents a logical grouping of tasks that has been automated with the objective of reducing or supplementing human interaction. A business process is a set of activities performed by people and machines that are necessary to bring about a desired result. Thus, an application represents a subset of the tasks of a business process. The remaining steps of any business process continue to be human activities and interactions. The bottom line is that most IT applications automate only a subset of the tasks in a business process, and often they do so in an inflexible way.

Most applications in widespread use today do not help to streamline processes. In many companies, departments buy niche technology to solve their particular problems. Even though in recent years the application footprint of enterprise resource planning (ERP) has expanded, companies still find themselves with separate applications addressing customer relationship management (CRM), supply chain management (SCM) and supplier resource management (SRM). The problem with these applications is that they are focused on function, not business process. They provide no real linkage between transactions and processes when business processes cross individual systems and departments.

Another problem with functional applications is that they lack integration with each other. Even though enterprise application integration (EAI) technology

can connect systems at critical data points, it really helps automate only transactions – not processes. Thus, integration, if used alone, actually can become a barrier to getting desired results.

Limits of Traditional BI

BI tools are widely used to complement enterprise applications. Application-specific BI tools do a great job of surfacing after-the-fact data captured in, say, an ERP or SCM application. Transactional data is stored and aggregated in a repository, such as an operational data store, for reporting, analysis and visualization. Application BI comes preconfigured to support the data schemas, application programming interfaces (APIs), security mechanisms and business logic of the particular transactional system. This approach speeds the extraction of information and helps maintain the integrity of source applications. Unfortunately, it also limits the scope of BI in decision-making.

BI reporting functionality often is included with an ERP or CRM solution, for example, in predefined or “canned” reports specific to that one application. The reports come from data without its process context, which typically spans multiple applications. Processes such as mortgage approval or call center routing, for example, require information from multiple applications and data sources. So the usefulness of the application-based reports is limited. Reporting embedded within each solution cannot satisfy the requirements of combining data and processes from disparate applications.

Another example of unnecessarily limited BI utilization occurs when data from multiple applications is homogenized in a data warehouse. In this situation, reporting and analytics provide enterprise-wide visibility, but the data loses business applicability – that is, the ability to facilitate collaboration and support decision-making in the context of a specific business process. An example of this is the different ways customer data appears within a data warehouse and outside of it. Data homogenized from sales force automation software (sales opportunity data) and a separate order management system (customer order data) provides good insight into customer buying trends and fits well in the structure of a data warehouse. However, it is missing the granular customer contact data required for the business process of escalation.

Traditional BI also has a latency problem: The information is not available quickly enough to support individuals making immediate decisions. Often the stored data is out of date for operational response; for example, a bank today needs to complete loan approvals in hours, not days. Hourly and near-real-time information is important for operational responsiveness to such competitive pressures.

Also, traditional BI information is not delivered in the context of a business process, but rather at the individual, entity or activity level. Information should be in the context of causal activities preceding a situation and consequential activities following it.

The latency and context issues compound another problem: BI information is not always actionable. Individuals receiving analytic information also need options for possible next steps. For example, call center managers must be given information that is timely (such as that call volumes are in excess now), and notification must be in a form that supports an active response (telling where to route those calls).

Even if the problems of integration, collaboration, latency, context and actionability in business intelligence usage were solved, corporate executives still would not have the complete foundation they need. The ultimate goal of BPM is performance management, and a key component of performance management is alignment: the process of linking strategy with corporate goals and objectives in a way that makes best use of the company's resources by coordinating the efforts of every member of the organization. Alignment links strategies and goals across the organization from the present into the future. In other words, performance management is about managing the business moving forward, not just looking at past results.

Here traditional BI falls short in that it looks backward at results and analyzes what happened. While understanding the past is a necessary part of the performance management cycle, dynamic businesses need to look also at what is happening now – that is, to get real-time data about events and processes. And they need to project what will happen – to be able to anticipate the consequences of future choices, actions or plans. All these time-oriented steps are needed for good performance management, and so for proper business process management.

Plan for BI with BPM

Companies should do more with their BI deployments. Most businesses do not set performance targets and goals for processes and then monitor those. Nor do they map strategy to business processes.

Henry Ford did it. His strategy was to produce cars at a lower cost by increasing the throughput of production. He divided automobile production into specialized tasks and set time standards as target goals for each, to be able to monitor production rates. Concurrently, he employed accounting methods to measure the favorable and unfavorable cost impacts of faster or

slower production speeds. By employing these methods he could optimize production to meet his cost goals.

Ford's methods illustrate how setting corporate performance targets and goals trickle down to performance goals and targets for business processes. Today's companies can use modern methods to align their own processes with goals.

To assure that process performance is connected to results, organizations need to include BI at each stage of the process performance life cycle. That life cycle includes process planning, execution and management.

At the first stage, "planning performance," managers need to define, in order, the desired outcomes of a business process, the resources needed to support it and the strategy by which to achieve the outcomes. This should be a cross-functional exercise that involves all managers and line workers who participate in the process. They should set expectations via the creation of goals and planned outcomes and record these goals and expected outcomes for future plan-vs.-actual comparison. The next step is to determine resources and support requirements. Plans will become operational once the business rules and individual process steps that make up the overall process all are defined. In this first phase, managers make sure that the resources, structure and support are in place for proper process execution.

At stage two, "executing performance," each step of the business process is carried out exactly as the plan and the rules specify. At each step, inputs, outputs, messages and process data are recorded to monitor the behaviors of users of the process.

At stage three, "managing performance," managers analyze process outcomes and process behavior data for deviations from the performance plan and to determine what action needs to be taken. This action can be corrective, preventive or sustaining. Typically, business process managers give feedback to the process participants about the execution, and the process is changed as appropriate to pursue the targeted outcomes more effectively.

Most process managers stop here. But they ought to go further and fully close the performance management loop by providing feedback to stage one (planning performance). If processes are to be changed, new business rules, expectations, resources and support also must be determined and new process outcome expectations recorded. All these steps must be followed if optimal performance is to be attained.

To ensure that the goals are met, business unit and IT process managers should apply BI and BPM technology jointly at each stage of the process performance life cycle. In stage one, business and IT process planners need a flexible BPM modeling tool that meets both their needs. While the logic of an automated business process can be implemented directly in a programming language or script, successfully creating an automated business process usually requires collaboration between software developers and business users. For the most part, business-side people should be responsible for designing, maintaining and managing business processes. But since they aren't programmers, they need to be able to do the design work in a simple, graphical environment in which they define process steps (workflow) and process parameters (basic business rules).

Integral to the effective design of these processes is the incorporation of parameters that will capture the performance data or events for later business intelligence reporting, analysis and business activity monitoring. Business and IT process planners must know this and work together to bake these key capture points into the process. They also must work together to create visual representations of how strategies map to business processes. Here, the same process designers must incorporate BI technology to map key performance indicators and corporate initiatives into the process flow diagram.

At stage two (executing performance) the automated business intelligence data capture defined in the process records key inputs, outputs and process data. It is important to remember that most business processes span multiple applications, so any process messages and transactional data have to be synchronized.

BI technology plays another key role is stage three (managing performance). Here, technology helps close the loop by summarizing performance outcomes. Scorecards, dashboards, alerts and portals play supporting roles with visual representations of the resulting data and events. Scorecards in particular provide an effective way to display process KPIs; they provide easy-to-understand icons such as traffic lights (in red, yellow and green), gauges and heat maps that show the performance of a KPI metric against a target process benchmark. Desktop office applications, particularly spreadsheets, also play a role since they extend performance analysis by serving up detail data, allowing drilling down to more detailed levels of information to spot exceptions and trends.

Convergence Improves Decision-Making

When BI and BPM are linked, they enable people to make better decisions – about business processes, within business processes and that initiate

business processes. This linkage brings content and context to individuals and teams across the organization. Let's look at some common situations in which the technologies can work together to improve business decision-making.

Companies can use BI and BPM to analyze and tune the efficiency of a business process. For example, businesses that process insurance claims must establish connections within a multisource data entry process that deals with thousands of claims per day. Claim processing moves a claim application from entry to validation to authorization to approval and ultimately to payment. The company needs to manage the time it takes to collate data from its many source points and to incorporate rigorous screening checks. Process designers should identify all points at which to customize claims, to perform additional checks and to establish what authorizations and business rules apply. To measure efficiency and effectiveness, process planners need to analyze the business model, identify bottlenecks and make improvements before executing the modified business process. BI provides these analytics for process efficiency and effectiveness by reporting on cycle times and process constraints.

A second example of BI and BPM convergence can be found in the order fulfillment process. Here, some process decisions are based on business data. When an order processor has determined that a priority customer has exceeded his credit limit, a trigger initiates an automated escalation process in which an alert is sent to the account manager and regional sales manager, notifying them of a delay in fulfillment. The alert notice can point to the open order (in the transaction system) and the sales history of the account (in the BI application) for them to review. The same alert also can be sent to the credit manager – the decision-maker – who sees not only the open order and the sales history but also the customer's payment history. In this way business process and business intelligence work together in ways determined by the business role and data security level defined for each individual.

A third example of convergence occurs when BPM manages a process that is kicked off by information generated by BI. The trade promotion management process, mentioned earlier, includes creating a promotion, selling it and evaluating its effectiveness. When the promotion is launched, its process infrastructure should include the steps needed to measure its effectiveness. These measurements help shape reactions to the process as it continues. If the promotion proves to be effective, then a process must be started to deliver more product units to the retailers. If the promotion proves ineffective, another process has to begin to create more awareness of the promotion or, alternately, bring it to an end. In any case, decision-makers need to see all the appropriate business intelligence reports on the

promotion, and from the same screen the marketing manager needs to be able to initiate the chosen business response process.

The Right Approach

To automate and improve business processes involves not only business process decisions but technology choices. Bringing together BI and BPM capabilities need not require a large investment in a single enterprise-wide technology. It is possible to procure a solution that can be implemented quickly without sacrificing the ability to scale and then built out incrementally. For many companies, this will represent the most manageable and cost-effective choice.

Business process management software should be able to integrate systems, trading partners and business users through flexible business processes. But as information technology continues to evolve, companies acquire an increasing number of systems and need to add more business users – and both these steps increase the challenges of implementing BPM.

The challenges begin with trying to get the several systems to work compatibly, a task that expands with each new business need and software upgrade. In addition to an increasing number of points of connectivity, business drivers such as just-in-time inventory and real-time reporting have introduced demands for accessibility and visibility into the processes that span these connected systems. BPM products have been in the market for more than a decade, but many are expensive and difficult to use and address only a single aspect of a company's needs. What's more, often they are hard to integrate with other BPM and BI technologies.

Typically, a company realizes the best return on investment when BI and BPM are brought together and integrated with a technology platform that enables joint development, management and interaction. Customers that desire to realize the benefits of BPM and BI technologies should consider the extensibility of the software platform as well as the degree to which the BI and BPM components are integrated. The platform also should extend to tools in everyday use, such as Microsoft Office. The best solution will make the most of both existing and new investments.