

# Key Performance Indicators

## Fast Easy Overview

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# Performance indicator

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A **performance indicator** or **key performance indicator (KPI)** is an industry jargon for a type of performance measurement.<sup>[1]</sup> KPIs are commonly used by an organization to evaluate its success or the success of a particular activity in which it is engaged. Sometimes success is defined in terms of making progress toward strategic goals,<sup>[2]</sup> but often success is simply the repeated achievement of some level of operational goal (for example, zero defects, 10/10 customer satisfaction, etc.). Accordingly, choosing the right KPIs is reliant upon having a good understanding of what is important to the organization. 'What is important' often depends on the department measuring the performance - the KPIs useful to finance will be quite different than the KPIs assigned to sales, for example. Because of the need to develop a good understanding of what is important, performance indicator selection is often closely associated with the use of various techniques to assess the present state of the business, and its key activities. These assessments often lead to the identification of potential improvements; and as a consequence, performance indicators are routinely associated with 'performance improvement' initiatives. A very common way for choosing KPIs is to apply a management framework such as the balanced scorecard.

## Categorization of indicators

Key performance indicators define a set of values used to measure against. These raw sets of values, which are fed to systems in charge of summarizing the information, are called **indicators**. Indicators identifiable as possible candidates for KPIs can be summarized into the following sub-categories:

- **Quantitative indicators** which can be presented as a number.
- **Practical indicators** that interface with existing company processes.
- **Directional indicators** specifying whether an organization is getting better or not.
- **Actionable indicators** are sufficiently in an organization's control to affect change.
- **Financial indicators** used in performance measurement and when looking at an operating index.

Key performance indicators, in practical terms and for strategic development, are *objectives* to be targeted that will add the most *value* to the business. These are also referred to as key success indicators.

## Some important aspects

Key performance indicators (KPIs) are ways to periodically assess the performances of organizations, business units, and their division, departments and employees. Accordingly, KPIs are most commonly defined in a way that is understandable, meaningful, and measurable. They are rarely defined in such a way such that their fulfillment would be hampered by factors seen as non-controllable by the organizations or individuals responsible. Such KPIs are usually ignored by organizations.

In order to be evaluated, KPIs are linked to target values, so that the value of the measure can be assessed as meeting expectations or not.

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## Identifying indicators of organization

Performance indicators differ from business drivers and aims (or goals). A school might consider the failure rate of its students as a key performance indicator which might help the school understand its position in the educational community, whereas a business might consider the percentage of income from returning customers as a potential KPI.

The key stages in identifying KPIs are:

- Having a pre-defined business process (BP).
- Having requirements for the BPs.
- Having a quantitative/qualitative measurement of the results and comparison with set goals.
- Investigating variances and tweaking processes or resources to achieve short-term goals.

A KPI can follow the SMART criteria. This means the measure has a **S**pecific purpose for the business, it is **M**easurable to really get a value of the KPI, the defined norms have to be **A**chievable, the improvement of a KPI has to be **R**elevant to the success of the organization, and finally it must be **T**ime phased, which means the value or outcomes are shown for a predefined and relevant period.

## KPI examples

### Marketing

Some examples are:

1. New customers acquired
2. Demographic analysis of individuals (potential customers) applying to become customers, and the levels of approval, rejections, and pending numbers.
3. Status of existing customers
4. Customer attrition
5. Turnover (i.e., revenue) generated by segments of the customer population.
6. Outstanding balances held by segments of customers and terms of payment.
7. Collection of bad debts within customer relationships.
8. Profitability of customers by demographic segments and segmentation of customers by profitability.

Many of these customer KPIs are developed and managed with customer relationship management software.

Faster availability of data is a competitive issue for most organizations. For example, businesses which have higher operational/credit risk (involving for example credit cards or wealth management) may want weekly or even daily availability of KPI analysis, facilitated by appropriate IT systems and tools.

### Manufacturing

Overall equipment effectiveness, is a set of broadly accepted non-financial metrics which reflect manufacturing success.

- **Cycle Time** – Cycle time is the total time from the beginning to the end of your process, as defined by you and your customer. Cycle time includes process time, during which a unit is acted upon to bring it closer to an output, and delay time, during which a unit of work is spent waiting to take the next action.
  - **Cycle Time Ratio (CTR)** –  $CTR = \text{Standard Cycle Time} / \text{Real Cycle Time}$
  - Utilization
  - Rejection rate
-

## **IT**

- Availability
- Mean time between failure
- Mean time to repair
- Unplanned availability

## **Supply Chain Management**

Businesses can utilize KPIs to establish and monitor progress toward a variety of goals, including lean manufacturing objectives, minority business enterprise and diversity spending, environmental "green" initiatives, cost avoidance programs and low-cost country sourcing targets.

Any business, regardless of size, can better manage supplier performance with the help of KPIs robust capabilities, which include:

- Automated entry and approval functions
- On-demand, real-time scorecard measures
- Rework on procured inventory.
- Single data repository to eliminate inefficiencies and maintain consistency
- Advanced workflow approval process to ensure consistent procedures
- Flexible data-input modes and real-time graphical performance displays
- Customized cost savings documentation
- Simplified setup procedures to eliminate dependence upon IT resources.

Main SCM KPIs will detail the following processes:

- Sales forecasts
- Inventory
- Procurement and suppliers
- Warehousing
- Transportation
- Reverse logistics

Suppliers can implement KPIs to gain an advantage over the competition. Suppliers have instant access to a user-friendly portal for submitting standardized cost savings templates. Suppliers and their customers exchange vital supply chain performance data while gaining visibility to the exact status of cost improvement projects and cost savings documentation.

## **Government**

The provincial government of Ontario, Canada has been using KPI since 1998 to measure the performance of higher education institutions in the province. All post secondary schools collect and report performance data in five areas – graduate satisfaction, student satisfaction, employer satisfaction, employment rate, and graduation rate.<sup>[3]</sup>

## **Further performance indicators**

- Duration of a stockout situation
  - Customer order waiting time
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## Problems

In practice, overseeing key performance indicators can prove expensive or difficult for organizations. Some indicators such as staff morale may be impossible to quantify. As such dubious KPIs can be adopted that can be used as a rough guide rather than a precise benchmark.

Another serious issue in practice is that once a measure is created, it becomes difficult to adjust to changing needs as historical comparisons will be lost. As such measures are kept even if of dubious relevance, because history does exist.

Comparisons between different organizations are often difficult as they depend on specific in-house practices and policies.

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## Further reading

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# Business intelligence

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**Business intelligence (BI)** is defined as the ability for an organization to take all its capabilities and convert them into knowledge. This produces large amounts of information which can lead to the development of new opportunities for the organization. When these opportunities have been identified and a strategy has been effectively implemented, they can provide an organization with a competitive advantage in the market, and stability in the long run (within its industry).<sup>[1]</sup>

BI technologies provide historical, current and predictive views of business operations. Common functions of business intelligence technologies are reporting, online analytical processing, analytics, data mining, process mining, complex event processing, business performance management, benchmarking, text mining, predictive analytics and prescriptive analytics.

Business intelligence aims to support better business decision-making. Thus a BI system can be called a decision support system (DSS).<sup>[2]</sup> Though the term business intelligence is sometimes used as a synonym for competitive intelligence, because they both support decision making, BI uses technologies, processes, and applications to analyze mostly internal, structured data and business processes while competitive intelligence gathers, analyzes and disseminates information with a topical focus on company competitors. Business intelligence understood broadly can include the subset of competitive intelligence.<sup>[3]</sup>

## History

In a 1958 article, IBM researcher Hans Peter Luhn used the term business intelligence. He defined intelligence as: "the ability to apprehend the interrelationships of presented facts in such a way as to guide action towards a desired goal."<sup>[4]</sup>

Business intelligence as it is understood today is said to have evolved from the decision support systems which began in the 1960s and developed throughout the mid-1980s. DSS originated in the computer-aided models created to assist with decision making and planning. From DSS, data warehouses, Executive Information Systems, OLAP and business intelligence came into focus beginning in the late 80s.

In 1989, Howard Dresner (later a Gartner Group analyst) proposed "business intelligence" as an umbrella term to describe "concepts and methods to improve business decision making by using fact-based support systems."<sup>[2]</sup> It was not until the late 1990s that this usage was widespread.<sup>[5]</sup>

## Business intelligence and data warehousing

Often BI applications use data gathered from a data warehouse or a data mart. However, not all data warehouses are used for business intelligence, nor do all business intelligence applications require a data warehouse.

In order to distinguish between concepts of business intelligence and data warehouses, Forrester Research often defines business intelligence in one of two ways:

Using a broad definition: "Business Intelligence is a set of methodologies, processes, architectures, and technologies that transform raw data into meaningful and useful information used to enable more effective strategic, tactical, and operational insights and decision-making."<sup>[6]</sup> When using this definition, business intelligence also includes technologies such as data integration, data quality, data warehousing, master data management, text and content analytics, and many others that the market sometimes lumps into the Information Management segment. Therefore, Forrester refers to *data preparation* and *data usage* as two separate, but closely linked segments of the business intelligence architectural stack.

Forrester defines the latter, narrower business intelligence market as "referring to just the top layers of the BI architectural stack such as reporting, analytics and dashboards."<sup>[7]</sup>

## Business intelligence and business analytics

Thomas Davenport has argued that business intelligence should be divided into querying, reporting, OLAP, an "alerts" tool, and business analytics. In this definition, business analytics is the subset of BI based on statistics, prediction, and optimization.<sup>[8]</sup>

## Applications in an enterprise

Business intelligence can be applied to the following business purposes, in order to drive business value.

1. Measurement – program that creates a hierarchy of performance metrics (see also Metrics Reference Model) and benchmarking that informs business leaders about progress towards business goals (business process management).
  2. Analytics – program that builds quantitative processes for a business to arrive at optimal decisions and to perform business knowledge discovery. Frequently involves: data mining, process mining, statistical analysis, predictive analytics, predictive modeling, business process modeling, complex event processing and prescriptive analytics.
  3. Reporting/enterprise reporting – program that builds infrastructure for strategic reporting to serve the strategic management of a business, not operational reporting. Frequently involves data visualization, executive information system and OLAP.
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4. Collaboration/collaboration platform – program that gets different areas (both inside and outside the business) to work together through data sharing and electronic data interchange.
5. Knowledge management – program to make the company data driven through strategies and practices to identify, create, represent, distribute, and enable adoption of insights and experiences that are true business knowledge. Knowledge management leads to learning management and regulatory compliance.

In addition to above, business intelligence also can provide a pro-active approach, such as ALARM function to alert immediately to end-user. There are many types of alerts, for example if some business value exceeds the threshold value the color of that amount in the report will turn RED and the business analyst is alerted. Sometimes an alert mail will be sent to the user as well. This end to end process requires data governance, which should be handled by the expert.

## Prioritization of business intelligence projects

It is often difficult to provide a positive business case for business intelligence initiatives and often the projects will need to be prioritized through strategic initiatives. Here are some hints to increase the benefits for a BI project.

- As described by Kimball<sup>[9]</sup> you must determine the tangible benefits such as eliminated cost of producing legacy reports.
- Enforce access to data for the entire organization.<sup>[10]</sup> In this way even a small benefit, such as a few minutes saved, will make a difference when it is multiplied by the number of employees in the entire organization.
- As described by Ross, Weil & Roberson for Enterprise Architecture,<sup>[11]</sup> consider letting the BI project be driven by other business initiatives with excellent business cases. To support this approach, the organization must have Enterprise Architects, which will be able to detect suitable business projects.

## Success factors of implementation

Before implementing a BI solution, it is worth taking different factors into consideration before proceeding. According to Kimball *et al.*, these are the three critical areas that you need to assess within your organization before getting ready to do a BI project:<sup>[12]</sup>

1. The level of commitment and sponsorship of the project from senior management
2. The level of business need for creating a BI implementation
3. The amount and quality of business data available.

## Business sponsorship

The commitment and sponsorship of senior management is according to Kimball *et al.*, the most important criteria for assessment.<sup>[13]</sup> This is because having strong management backing will help overcome shortcomings elsewhere in the project. But as Kimball *et al.* state: “even the most elegantly designed DW/BI system cannot overcome a lack of business [management] sponsorship”.<sup>[14]</sup>

It is important that management personnel who participate in the project have a vision and an idea of the benefits and drawbacks of implementing a BI system. The best business sponsor should have organizational clout and should be well connected within the organization. It is ideal that the business sponsor is demanding but also able to be realistic and supportive if the implementation runs into delays or drawbacks. The management sponsor also needs to be able to assume accountability and to take responsibility for failures and setbacks on the project. Support from multiple members of the management will ensure that the project will not fail if one person leaves the steering group. However, having many managers work together on the project can also mean that there are several different interests that attempt to pull the project in different directions, such as if different departments want to put more emphasis on their usage. This issue can be countered by an early and specific analysis of the business areas that will benefit the most from the implementation. All stakeholders in project should participate in this analysis in order for them to feel



ownership of the project and to find common ground.

Another management problem that should be encountered before start of implementation is if the business sponsor is overly aggressive. If the management individual gets carried away by the possibilities of using BI and starts wanting the DW or BI implementation to include several different sets of data that were not included in the original planning phase. However, since extra implementations of extra data will most likely add many months to the original plan, it is probably a good idea to make sure that the person from management is aware of his actions.

## **Business needs**

Because of the close relationship with senior management, another critical thing that needs to be assessed before the project is implemented is whether or not there is a business need and whether there is a clear business benefit by doing the implementation.<sup>[15]</sup> The needs and benefits of the implementation are sometimes driven by competition and the need to gain an advantage in the market. Another reason for a business-driven approach to implementation of BI is the acquisition of other organizations that enlarge the original organization it can sometimes be beneficial to implement DW or BI in order to create more oversight.

## **Amount and quality of available data**

Without good data, it does not really matter how good the management sponsorship or business-driven motivation is. Without the proper data, or with too little quality data, any BI implementation will fail. Before implementation it is a good idea to do data profiling; this analysis will be able to describe the "content, consistency and structure [...]"<sup>[15]</sup> of the data. This should be done as early as possible in the process and if the analysis shows that your data is lacking, it is a good idea to put the project on the shelf temporarily while the IT department figures out how to do proper data collection.

When planning for business data and business intelligence requirements, it is always advisable to consider the specific scenarios that apply to that particular organization, and then select the features of business intelligence needs that is best suited for the scenario selected.

More often than not, scenarios will revolve around distinct business processes, each of which is built on one or more data sources. These sources are used by features that present that data as information to knowledge workers, who subsequently act on those information. The business needs of the organization for each business process adopted will correspond to the essential steps of business intelligence. These essential steps of business intelligence includes but not limited to: (1)Go through business data sources in order to collect needed data (2)Convert business data to information and present appropriately (3)Query and analyze data, and (4)Act on those data collected

## **User aspect**

Some considerations must be made in order to successfully integrate the usage of business intelligence systems in a company. Ultimately the BI system must be accepted and utilized by the users in order for it to add value to the organization.<sup>[16][17]</sup> If the usability of the system is poor, the users may become frustrated and spend a considerable amount of time figuring out how to use the system or may not be able to really use the system. If the system does not add value to the users' mission, they will simply not use it.<sup>[17]</sup>

In order to increase the user acceptance of a BI system, it may be advisable to consult the business users at an early stage of the DW/BI lifecycle, for example at the requirements gathering phase.<sup>[16]</sup> This can provide an insight into the business process and what the users need from the BI system. There are several methods for gathering this information, such as questionnaires and interview sessions.

When gathering the requirements from the business users, the local IT department should also be consulted in order to determine to which degree it is possible to fulfill the business's needs based on the available data.<sup>[16]</sup>

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Taking on a user-centered approach throughout the design and development stage may further increase the chance of rapid user adoption of the BI system.<sup>[17]</sup>

Besides focusing on the user experience offered by the BI applications, it may also possibly motivate the users to utilize the system by adding an element of competition. Kimball<sup>[16]</sup> suggests implementing a function on the Business Intelligence portal website where reports on system usage can be found. By doing so, managers can see how well their departments are doing and compare themselves to others and this may spur them to encourage their staff to utilize the BI system even more.

In a 2007 article, H. J. Watson gives an example of how the competitive element can act as an incentive.<sup>[18]</sup> Watson describes how a large call centre has implemented performance dashboards for all the call agents and that monthly incentive bonuses have been tied up to the performance metrics. Furthermore the agents can see how their own performance compares to the other team members. The implementation of this type of performance measurement and competition significantly improved the performance of the agents.

Other elements which may increase the success of BI can be by involving senior management in order to make BI a part of the organizational culture and also by providing the users with the necessary tools, training and support.<sup>[18]</sup> By offering user training, more people may actually use the BI application.<sup>[16]</sup>

Providing user support is necessary in order to maintain the BI system and assist users who run into problems.<sup>[17]</sup> User support can be incorporated in many ways, for example by creating a website. The website should contain great content and tools for finding the necessary information. Furthermore, helpdesk support can be used. The helpdesk can be manned by e.g. power users or the DW/BI project team.<sup>[16]</sup>

## Marketplace

There are a number of business intelligence vendors, often categorized into the remaining independent "pure-play" vendors and the consolidated "megavendors" which have entered the market through a recent trend of acquisitions in the BI industry.<sup>[19]</sup>

Some companies adopting BI software decide to pick and choose from different product offerings (best-of-breed) rather than purchase one comprehensive integrated solution (full-service).<sup>[20]</sup>

## Industry-specific

Specific considerations for business intelligence systems have to be taken in some sectors such as governmental banking regulations. The information collected by banking institutions and analyzed with BI software must be protected from some groups or individuals, while being fully available to other groups or individuals. Therefore BI solutions must be sensitive to those needs and be flexible enough to adapt to new regulations and changes to existing laws.

## Semi-structured or unstructured data

Businesses create a huge amount of valuable information in the form of e-mails, memos, notes from call-centers, news, user groups, chats, reports, web-pages, presentations, image-files, video-files, and marketing material and news. According to Merrill Lynch, more than 85% of all business information exists in these forms. These information types are called either *semi-structured* or *unstructured* data. However, organizations often only use these documents once.<sup>[21]</sup>

The management of semi-structured data is recognized as a major unsolved problem in the information technology industry.<sup>[22]</sup> According to projections from Gartner (2003), white collar workers will spend anywhere from 30 to 40 percent of their time searching, finding and assessing unstructured data. BI uses both structured and unstructured data, but the former is easy to search, and the latter contains a large quantity of the information needed for analysis and decision making.<sup>[22][23]</sup> Because of the difficulty of properly searching, finding and assessing unstructured or

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semi-structured data, organizations may not draw upon these vast reservoirs of information, which could influence a particular decision, task or project. This can ultimately lead to poorly informed decision making.<sup>[21]</sup>

Therefore, when designing a business intelligence/DW-solution, the specific problems associated with semi-structured and unstructured data must be accommodated for as well as those for the structured data.<sup>[23]</sup>

## Unstructured data vs. semi-structured data

Unstructured and semi-structured data have different meanings depending on their context. In the context of relational database systems, it refers to data that cannot be stored in columns and rows. It must be stored in a BLOB (binary large object), a catch-all data type available in most relational database management systems.

But many of these data types, like e-mails, word processing text files, PPTs, image-files, and video-files conform to a standard that offers the possibility of metadata. Metadata can include information such as author and time of creation, and this can be stored in a relational database. Therefore it may be more accurate to talk about this as semi-structured documents or data,<sup>[22]</sup> but no specific consensus seems to have been reached.

## Problems with semi-structured or unstructured data

There are several challenges to developing BI with semi-structured data. According to Inmon & Nesavich,<sup>[24]</sup> some of those are:

1. Physically accessing unstructured textual data – unstructured data is stored in a huge variety of formats.
2. Terminology – Among researchers and analysts, there is a need to develop a standardized terminology.
3. Volume of data – As stated earlier, up to 85% of all data exists as semi-structured data. Couple that with the need for word-to-word and semantic analysis.
4. Searchability of unstructured textual data – A simple search on some data, e.g. apple, results in links where there is a reference to that precise search term. (Inmon & Nesavich, 2008)<sup>[24]</sup> gives an example: “a search is made on the term felony. In a simple search, the term felony is used, and everywhere there is a reference to felony, a hit to an unstructured document is made. But a simple search is crude. It does not find references to crime, arson, murder, embezzlement, vehicular homicide, and such, even though these crimes are types of felonies.”

## The use of metadata

To solve problems with searchability and assessment of data, it is necessary to know something about the content. This can be done by adding context through the use of metadata.<sup>[21]</sup> Many systems already capture some metadata (e.g. filename, author, size, etc.), but more useful would be metadata about the actual content – e.g. summaries, topics, people or companies mentioned. Two technologies designed for generating metadata about content are automatic categorization and information extraction.

## Future

A 2009 Gartner paper predicted<sup>[25]</sup> these developments in the business intelligence market:

- Because of lack of information, processes, and tools, through 2012, more than 35 percent of the top 5,000 global companies will regularly fail to make insightful decisions about significant changes in their business and markets.
- By 2012, business units will control at least 40 percent of the total budget for business intelligence.
- By 2012, one-third of analytic applications applied to business processes will be delivered through coarse-grained application mashups.

A 2009 *Information Management* special report predicted the top BI trends: "green computing, social networking, data visualization, mobile BI, predictive analytics, composite applications, cloud computing and multitouch."<sup>[26]</sup>

Other business intelligence trends include the following:<sup>[27]</sup>

- Third party SOA-BI products increasingly address ETL issues of volume and throughput.

- Cloud computing and Software-as-a-Service (SaaS) are ubiquitous.
- Companies embrace in-memory processing, 64-bit processing, and pre-packaged analytic BI applications.
- Operational applications have callable BI components, with improvements in response time, scaling, and concurrency.
- Near or real time BI analytics is a baseline expectation.
- Open source BI software replaces vendor offerings.

Other lines of research include the combined study of business intelligence and uncertain data.<sup>[28][29]</sup> In this context, the data used is not assumed to be precise, accurate and complete. Instead, data is considered uncertain and therefore this uncertainty is propagated to the results produced by BI.

According to a study by the Aberdeen Group, there has been increasing interest in Software-as-a-Service (SaaS) business intelligence over the past years, with twice as many organizations using this deployment approach as one year ago – 15% in 2009 compared to 7% in 2008.

An article by InfoWorld's Chris Kanaracus points out similar growth data from research firm IDC, which predicts the SaaS BI market will grow 22 percent each year through 2013 thanks to increased product sophistication, strained IT budgets, and other factors.<sup>[30]</sup>

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# Business performance management

**Business performance management** is a set of management and analytic processes that enable the management of an organization's performance to achieve one or more pre-selected goals. Synonyms for "business performance management" include "**corporate performance management (CPM)**"<sup>[1]</sup> and "**enterprise performance management**".<sup>[2][3]</sup>

Business performance management is contained within approaches to business process management.<sup>[4]</sup>

Business performance management has three main activities:

1. selection of goals,
2. consolidation of measurement information relevant to an organization's progress against these goals, and
3. interventions made by managers in light of this information with a view to improving future performance against these goals.

Although presented here sequentially, typically all three activities will run concurrently, with interventions by managers affecting the choice of goals, the measurement information monitored, and the activities being undertaken by the organization.

Because business performance management activities in large organizations often involve the collation and reporting of large volumes of data, many software vendors, particularly those offering business intelligence tools, market products intended to assist in this process. As a result of this marketing effort, business performance management is often incorrectly understood as an activity that necessarily relies on software systems to work, and many definitions of business performance management explicitly suggest software as being a definitive component of the approach.<sup>[5]</sup>

This interest in business performance management from the software community is sales-driven - "The biggest growth area in operational BI analysis is in the area of business performance management."<sup>[6]</sup>

Since 1992, business performance management has been strongly influenced by the rise of the balanced scorecard framework. It is common for managers to use the balanced scorecard framework to clarify the goals of an organization, to identify how to track them, and to structure the mechanisms by which interventions will be triggered. These steps are the same as those that are found in BPM, and as a result balanced scorecard is often used as the basis for business performance management activity with organizations.

In the past, owners have sought to drive strategy down and across their organizations, transform these strategies into actionable metrics and use analytics to expose the cause-and-effect relationships that, if understood, could give insight into decision-making.

## History

Reference to non-business performance management occurs in Sun Tzu's *The Art of War*. Sun Tzu claims that to succeed in war, one should have full knowledge of one's own strengths and weaknesses as well as those of one's enemies. Lack of either set of knowledge might result in defeat. Parallels between the challenges in business and those of war include:

- collecting data - both internal and external
- discerning patterns and meaning in the data (analyzing)
- responding to the resultant information

Prior to the start of the Information Age in the late 20th century, businesses sometimes took the trouble to laboriously collect data from non-automated sources. As they lacked computing resources to properly analyze the data, they often made commercial decisions primarily on the basis of intuition.

As businesses started automating more and more systems, more and more data became available. However, collection often remained a challenge due to a lack of infrastructure for data exchange or due to incompatibilities between systems. Reports on the data gathered sometimes took months to generate. Such reports allowed informed long-term strategic decision-making. However, short-term tactical decision-making often continued to rely on intuition.

In 1989 Howard Dresner, a research analyst at Gartner, popularized "business intelligence" (BI) as an umbrella term to describe a set of concepts and methods to improve business decision-making by using fact-based support systems. Performance management builds on a foundation of BI, but marries it to the planning-and-control cycle of the enterprise - with enterprise planning, consolidation and modeling capabilities.

Increasing standards, automation, and technologies have led to vast amounts of data becoming available. Data warehouse technologies have allowed the building of repositories to store this data. Improved ETL and enterprise application integration tools have increased the timely collecting of data. OLAP reporting technologies have allowed faster generation of new reports which analyze the data. As of 2010, business intelligence has become the art of sieving through large amounts of data, extracting useful information and turning that information into actionable knowledge.

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## Definition and scope

Business performance management consists of a set of management and analytic processes, supported by technology, that enable businesses to define strategic goals and then measure and manage performance against those goals. Core business performance management processes include financial planning, operational planning, business modeling, consolidation and reporting, analysis, and monitoring of key performance indicators linked to strategy.

Business performance management involves consolidation of data from various sources, querying, and analysis of the data, and putting the results into practice.

## Methodologies

Various methodologies for implementing business performance management exist. The discipline gives companies a top-down framework by which to align planning and execution, strategy and tactics, and business-unit and enterprise objectives. Reactions may include the Six Sigma strategy, balanced scorecard, activity-based costing (ABC), Total Quality Management, economic value-add, integrated strategic measurement and Theory of Constraints.

The balanced scorecard is the most widely adopted performance management methodology.

Methodologies on their own cannot deliver a full solution to an enterprise's CPM needs. Many pure-methodology implementations fail to deliver the anticipated benefits due to lack of integration with fundamental CPM processes.

## Metrics and key performance indicators

Some of the areas from which bank management may gain knowledge by using business performance management include:

- customer-related numbers:
  - new customers acquired
  - status of existing customers
  - attrition of customers (including breakup by reason for attrition)
- turnover generated by segments of the customers - possibly using demographic filters
- outstanding balances held by segments of customers and terms of payment - possibly using demographic filters
- collection of bad debts within customer relationships
- demographic analysis of individuals (potential customers) applying to become customers, and the levels of approval, rejections and pending numbers
- delinquency analysis of customers behind on payments
- profitability of customers by demographic segments and segmentation of customers by profitability
- campaign management
- real-time dashboard on key operational metrics
  - overall equipment effectiveness
- clickstream analysis on a website
- key product portfolio trackers
- marketing-channel analysis
- sales-data analysis by product segments
- callcenter metrics

Though the above list describes what a bank might monitor, it could refer to a telephone company or to a similar service-sector company.

Items of generic importance include:

1. consistent and correct KPI-related data providing insights into operational aspects of a company
2. timely availability of KPI-related data

3. KPIs designed to directly reflect the efficiency and effectiveness of a business
4. information presented in a format which aids decision-making for management and decision-makers
5. ability to discern patterns or trends from organized information

Business performance management integrates the company's processes with CRM or ERP. Companies should become better able to gauge customer satisfaction, control customer trends and influence shareholder value.

## Application software types

People working in business intelligence have developed tools that ease the work of business performance management, especially when the business-intelligence task involves gathering and analyzing large amounts of unstructured data.

Tool categories commonly used for business performance management include:

- OLAP — online analytical processing, sometimes simply called "analytics" (based on dimensional analysis and the so-called "hypercube" or "cube")
- scorecarding, dashboarding and data visualization
- data warehouses
- document warehouses
- text mining
- DM — data mining
- BPO — business performance optimization
- EPM — enterprise performance management
- EIS — executive information systems
- DSS — decision support systems
- MIS — management information systems
- SEMS — strategic enterprise management software

## Design and implementation

Questions asked when implementing a business performance management program include:

- **Goal-alignment queries**

Determine the short- and medium-term purpose of the program. What strategic goal(s) of the organization will the program address? What organizational mission/vision does it relate to? A hypothesis needs to be crafted that details how this initiative will eventually improve results / performance (i.e. a strategy map).

- **Baseline queries**

Assess current information-gathering competency. Does the organization have the capability to monitor important sources of information? What data is being collected and how is it being stored? What are the statistical parameters of this data, e.g., how much random variation does it contain? Is this being measured?

- **Cost and risk queries**

Estimate the financial consequences of a new BI initiative. Assess the cost of the present operations and the increase in costs associated with the BPM initiative. What is the risk that the initiative will fail? This risk assessment should be converted into a financial metric and included in the planning.

- **Customer and stakeholder queries**

Determine who will benefit from the initiative and who will pay. Who has a stake in the current procedure? What kinds of customers / stakeholders will benefit directly from this initiative? Who will benefit indirectly? What quantitative / qualitative benefits follow? Is the specified initiative the best or only way to increase satisfaction for all kinds of customers? How will customer benefits be monitored? What about employees,



shareholders, and distribution channel members?

- **Metrics-related queries**

Information requirements need operationalization into clearly defined metrics. Decide which metrics to use for each piece of information being gathered. Are these the best metrics and why? How many metrics need to be tracked? If this is a large number (it usually is), what kind of system can track them? Are the metrics standardized, so they can be benchmarked against performance in other organizations? What are the industry standard metrics available?

- **Measurement methodology-related queries**

Establish a methodology or a procedure to determine the best (or acceptable) way of measuring the required metrics. How frequently will data be collected? Are there any industry standards for this? Is this the best way to do the measurements? How do we know that?

- **Results-related queries**

Monitor the BPM program to ensure that it meets objectives. The program itself may require adjusting. The program should be tested for accuracy, reliability, and validity. How can it be demonstrated that the BI initiative, and not something else, contributed to a change in results? How much of the change was probably random?

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