EMERGING DYNAMICS IN BUSINESS ANALYTICS

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Business analytics (BA) is the practice of iterative, methodical exploration of an organization’s data with emphasis on statistical analysis. Business analytics is used by companies committed to data-driven decision making. It is used to gain insights that inform business decisions and can be used to automate and optimize business processes. Data-driven companies treat their data as a corporate asset and leverage it for competitive advantage. Successful business analytics depends on data quality, skilled analysts who understand the technologies and the business and an organizational commitment to data-driven decision making.

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INTRODUCTION

Redefining Business Intelligence

Let’s step back for a moment and think about the definition of business intelligence. Among the popular definitions today are David Loshin’s “... the processes, technologies and tools needed to turn data into information, information into knowledge, and knowledge into plans that drive profitable business actions” and Larissa Moss’ “... an architecture and a collection of integrated operational as well as decision-support applications and databases that provide the business community easy access to business data.”

To add to it, business intelligence isn’t about processes, technologies, tools, applications, data and databases. Nor is it about OLAP, scorecards and dashboards. When a BI program gives more attention to technology than to finance, R&D, marketing, sales, operation, and customer support, then it is time to put the business back into business intelligence!

To that end, we can propose a new definition of business intelligence. Let’s begin with the essence of intelligence. Wikipedia provides a simple layperson description of intelligence as “the capacities to reason, plan, solve problems, think abstractly, comprehend and learn.” Wikipedia also defines business as “the social science of managing people to organize and maintain collective productivity toward accomplishing ... goals.” Combining these
thoughts, following can be the next-generation
definition of business intelligence:

Business intelligence is the ability of an
organization or business to reason, plan, predict,
solve problems, think abstractly, comprehend,
innovate and learn in ways that increase
organizational knowledge, inform decision
processes, enable effective actions, and help to
establish and achieve business goals.

Processes, technologies, tools, applications,
data, databases, dashboards, scorecards and
OLAP all have roles to enable the abilities that
define business intelligence. But they are only the
means to BI – not the intelligence itself.

The “Intelligence” in Business Intelligence
The intelligent business, then, is one that has the
capabilities itemized in the definition. Consider
what it means for the culture, efficiency,
effectiveness, sustainability and profitability of a
business that is capable of:

• **Reasoning** – the ability to perform or the act
  of performing three activities – identifying root
  causes, understanding cause and effect, and
  logically developing conclusions based on
  understanding of root causes.

• **Planning** – determining a course of action
  based upon understanding and reasoning.

• **Prediction** – envisioning the future with a
  sound basis of reasoning and with a high
degree of probability that the actual future will
  be much like the envisioned future.

• **Problem solving** – getting beyond symptoms
  to address fundamental causes of undesirable
  patterns and behaviors that are found in root
  cause analysis.

• **Abstraction** – removing details and specifics
  from a situation to see general concepts,
  patterns, ideas and impacts.

• **Comprehend and understand** – the ability
to perceive, discern and distinguish – in
particular, to perceive situations and conditions,
and to distinguish problems from symptoms.

• **Innovate** – the ability to create something new
through study and experimentation. Innovation
often occurs by combining or connecting
existing things in different ways.

• **Learn** – a cognitive process of acquiring skill
and knowledge; learning is the ultimate
feedback loop.

Business Analytics
Analytics is the science of analysis – the
processes by which we interpret data, draw
conclusions and make decisions. Business
analytics goes well beyond simply presenting
data, numbers and statistics. The essence of
analytics lies in the application of logic and mental
processes to find meaning in data. Through these
mental processes, we create the capacities that
define intelligence – abilities to reason, plan,
predict, solve problems, abstract, understand,
innovate and learn.

Viewed in this context, business analytics is a
powerful thing. Yet it is also a large and complex
field that encompasses statistical analysis,
predictive analytics, text and speech analytics,
web analytics, visualization, causal analysis,
decision processes and much more. Most
importantly, business analytics involves people –
the business analysts who apply the logic and
mental processes.

Once the business goal of the analysis is
determined, an analysis methodology is selected
and data is acquired to support the analysis. Data acquisition often involves extraction from one or more business systems, cleansing, and integration into a single repository such as a data warehouse or data mart. The analysis is typically performed against a smaller sample set of data. Analytic tools range from spreadsheets with statistical functions to complex data mining and predictive modeling applications. As patterns and relationships in the data are uncovered, new questions are asked and the analytic process iterates until the business goal is met. Deployment of predictive models involves scoring data records (typically in a database) and using the scores to optimize real-time decisions within applications and business processes. BA also supports tactical decision making in response to unforeseen events, and in many cases the decision making is automated to support real-time responses.

Recognizing the growing popularity of business analytics, business intelligence application vendors are including some BA functionality in their products. More recently, data warehouse appliance vendors have started to embed BA functionality within the appliance. Major enterprise system vendors are also embedding analytics, and the trend towards putting more analytics into memory is expected to shorten the time between a business event and decision/response.

Business analytics is surely the next major evolutionary step in the continuously changing field of Business Intelligence (BI). First we tackled data integration – that was the data warehousing era of the early 1990s. In the late ’90s and the early part of this century, attention shifted from data to delivery of information – the OLAP, scorecards and dashboards movement. Today we are pretty good at delivering information. Yet for many, true intelligence remains elusive. Surprise! Intelligence is not about how you acquire information; it is about how you use the information that you have. Examples of BA uses include:

- Exploring data to find new patterns and relationships (data mining)
- Explaining why a certain result occurred (statistical analysis, quantitative analysis)
- Experimenting to test previous decisions (A/B testing, multivariate testing)
- Forecasting future results (predictive modeling, predictive analytics)

To satisfy these goals, analytics must meet three criteria:

- **Purposeful**: Business analytics are purposeful when we know why we create the information and perform the analytic activities. The understanding derived from analysis aligns with business functions (finance, marketing, sales, etc.) and with the issues and objectives of management (performance, compliance, risk, etc.).

- **Insightful**: Business analytics are insightful when they help us to discover new facts or information, to become aware of things previously hidden. Cause-and-effect insight is often the most valuable in business decision making. Analytics that simply confirm status quo or reaffirm conventional wisdom offer no insight – they don’t have the power to make a difference. Perhaps Oliver Wendell Holmes best expresses the power of insight: “A moment’s insight is sometimes worth a life’s experience.”

- **Actionable**: Actionable information is an often
used but rarely defined term. The popular
definition is “information that makes action
possible” – a circular but not very informative.

Information is actionable when it supports the
total process of action-taking including discovery
and insight, determination and resolve, decision
making, innovation and creativity, and the
implementation of decisions. Actionable
information is aligned with the knowledge of the
person taking action and integrates with the
processes where actions are to be implemented.

Business Analytics and Business Intelligence

So what is it that distinguishes business analytics
from business intelligence? Where does the
subject of analytics fit in the scope of business
intelligence?

Business analytics, then, is an integral part
of business intelligence. It takes its place alongside
data integration, data access, and reporting to
complete the sequence that The Data Warehousing Institute (TDWI) describes as the
BI value chain – the sequence that begins with
data and ends by delivering business value.

By mapping the value chain to the activities of
business intelligence, it becomes easy to see the
role of business analytics. Conventional data
warehousing and reporting ends at the data-to-
information stage. Business analytics extends
through the knowledge stage with analysis and
understanding, which in turn support decision and
action. A complete analytics system measures the
results that are produced and provides a feedback
loop that facilitates organizational learning.

CONCLUSION

So business analytics isn’t really about linear
regression, although it is a useful technique in
analysis. Nor is it about time-series analysis,
though many of your analytic studies are likely to
involve time series. But the heart and soul of
analytics is about making a difference – providing
the insight and understanding to support informed
decisions and confident actions, and providing
the feedback that is needed to create a learning
organization.

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