CHAPTER 1

Business Analytics: A Definition

Before we define the guidelines that establish best practice, it's important to spend a bit of time defining *business analytics* and why it's different from pure analytics or *advanced analytics*.[1]

WHAT IS BUSINESS ANALYTICS?

The cornerstone of business analytics is pure analytics. Although it is a very broad definition, analytics can be considered any data-driven process that provides insight. It may report on historical information or it may provide predictions about future events; the end goal of analytics is to add value through insight and turn data into information.

Common examples of analytics include:

- Reporting: The summarization of historical data
- Trending: The identification of underlying patterns in time-series data
- Segmentation: The identification of similarities within data
- Predictive modeling: The prediction of future events using historical data

Each of these use cases has a number of common characteristics:

- They are based on data (as opposed to opinion).
- They apply various mathematical techniques to transform and summarize raw data.
- They add value to the original data and transform it into knowledge.

Activities such as business intelligence, reporting, and performance management tend to focus on what happened—that is, they analyze and present historical information.

Advanced analytics, on the other hand, aims to understand *why* things are happening and predict *what* will happen. The distinguishing characteristic between advanced analytics and reporting is the use of higher-order statistical and mathematical techniques such as:

- Operations research
- Parametric or nonparametric statistics
- Multivariate analysis
- Algorithmically based predictive models (such as decision trees, gradient boosting, regressions, or transfer functions)

Business analytics leverages all forms of analytics to achieve business outcomes. It seems a small difference but it's an important one—business analytics adds to analytics by requiring:

- Business relevancy
- Actionable insight
- Performance measurement and value measurement

There's a great deal of knowledge that can be created by applying various forms of analytics. Business analytics, however, makes a distinction between relevant knowledge and irrelevant knowledge. A significant part of business analytics is identifying the insights that would be valuable (in a real and measurable way), given the business' strategic and tactical objectives. If analytics is often about finding interesting things in large amounts of data, business analytics is about making sure that this information has contextual relevancy and delivers real value.

Once created, this knowledge must be acted on if value is to be created. Whereas analytics focuses primarily on the creation of the insight and not necessarily on what should be done with the insight once created, business analytics recognizes that creating the insight is only one small step in a larger value chain. Equally important (if not more important) is that the insight be used to realize the value.

This operational and actionable point of view can create substantially different outcomes when compared to applying pure analytics. If only the insight is considered in isolation, it's quite easy to develop a series of outcomes that cannot be executed within the broader organizational context. For example, a series of models may be developed that, although extremely accurate, may be impossible to integrate into the organization's operational systems. If the tools that created the models aren't compatible with the organization's inventory management systems, customer-relationships management systems, or other operational systems, the value of the insight may be high but the realized value negligible.

By approaching the same problem from a business analytics perspective, the same organization may be willing to sacrifice model accuracy for ease of execution, ensuring that economic value is delivered, even though the models may not have as high a standard as they otherwise could have. A model that is 80 percent accurate but can be acted on creates far more value than an extremely accurate model that can't be deployed.

This operational aspect forms another key distinction between analytics and business analytics. More often than not, analytics is about answering a question at a point in time. Business analytics, on the other hand, is about sustained value delivery. Tracking value and measuring performance, therefore, become critical elements of ensuring long-term value from business analytics.

CORE CONCEPTS AND DEFINITIONS

This section presents a brief primer and is unfortunately necessarily dry; it provides the core conceptual framework for everything discussed in this book. This book will refer repeatedly to a variety of concepts. Although the terms and concepts defined in this chapter serve as a useful

taxonomy, they should not be read as a comprehensive list of strict definitions; depending on context and industry, they may go by other names. One of the challenges of a relatively young discipline such as business analytics is that, although there is tremendous potential for innovation, it has yet to develop a standard vocabulary.

The intent of the terms used throughout this book is simply to provide consistency, not to provide a definitive taxonomy or vocabulary. They're worth reading closely even for those experienced in the application of business analytics—terms vary from person to person, and although readers may not always agree with the semantics presented here, given their own backgrounds and context, it's essential that they understand what is meant by a particular word. Key terms are emphasized to aid readability.

Business analytics is the use of data-driven insight to generate value. It does so by requiring business relevancy, the use of actionable insight, and performance measurement and value measurement.

This can be contrasted against *analytics*, the process of generating insight from data. Analytics without business analytics creates no return—it simply answers questions. Within this book, analytics represents a wide spectrum that covers all forms of data-driven insight including:

- Data manipulation
- Reporting and business intelligence
- Advanced analytics (including data mining and optimization)

Broadly speaking, analytics divides relatively neatly into techniques that help understand *what happened* and techniques that help understand:

- What *will* happen.
- Why it happened.
- What is the best course of action.

Forms of analytics that help provide this greater level of insight are often referred to as *advanced analytics*.

The final output of business analytics is *value* of some form, either *internal* or *external*. Internal value is value as seen from the perspective

of a team within the organization. Among other things, returns are usually associated with cost reductions, resource efficiencies, or other internally related financial aspects. External value is value as seen from outside the organization. Returns are usually associated with revenue growth, positive outcomes, or other market- and client-related measures.

This value is created through leveraging *people*, *process*, *data*, and *technology*. *People* are the individuals and their skills involved in applying business analytics. *Processes* are a series of *activities* linked to achieve an outcome and can be either *strongly defined* or *weakly defined*. A strongly defined process has a series of specific steps that is repeatable and can be automated. A weakly defined process, by contrast, is undefined and relies on the ingenuity and skill of the person executing the process to complete it successfully.

Data are quantifiable measures stored and available for analysis. They often include transactional records, customer records, and free-text information such as case notes or reports. *Assets* are produced as an intermediary step to achieving value. Assets are a general class of items that can be defined, are measurable, and have implicit tangible or intangible value. Among other things, they include new processes, reports, models, reports, and datamarts. Critically, they are only an asset within this book if they can be automated and can be repeatedly used by individuals other than those who created it.

Assets are developed by having a team apply various *competencies*. A competency is a particular set of skills that can be applied to solve a wide variety of business problems. Examples include the ability to develop predictive models, the ability to create insightful reports, and the ability to operationalize insight through effective use of technology.

Competencies are applied using various *tools* (often referred to as *technology*) to generate new assets. These assets often include new processes, datamarts, models, or documentation. Often, tools are consolidated into a common *analytical platform*, a technology environment that ranges from being spread across multiple desktop personal computers (PCs) right through to a truly enterprise platform.

Analytical platforms, when properly implemented, make a distinction between a *discovery environment* and an *operational environment*. The role of the discovery environment is to generate insight. The role

of the operational environment is to allow this insight to be applied automatically with strict requirements around reliability, performance, and availability.

The core concepts of people, process, data, and technology feature heavily in this book, and, although they are a heavily used and abused framework, they represent the core of systems design. Business analytics is primarily about facilitating change; business analytics is nothing without driving toward better outcomes. When it comes to driving change, establishing a roadmap inevitably involves driving change across these four dimensions. Although this book isn't explicitly written to fit with this framework, it relies heavily on it.

NOTE

1. Astute readers will notice that this section draws from my prior book, E. Stubbs, *The Value of Business Analytics* (Hoboken, NJ: Wiley, 2011).