Data Quality and Change in BA

Ensuring Data Quality

Business analytics, if relevant, is based on data assumed to be of high quality. Data quality refers to accuracy, precision, and completeness of data. High-quality data is considered to correctly reflect the real world in which it is extracted. Poor-quality data caused by data entry errors, poorly maintained databases, out-of-date data, and incomplete data usually leads to bad decisions and undermines BA within a firm. Organizationally, the database management systems (DBMS, mentioned in Chapter 3) personnel are managerially responsible for ensuring data quality. Because of its importance and the possible location of the BA department outside the management information systems department (which usually hosts the DBMS), it is imperative that whoever leads the BA program should seek to ensure data quality efforts are undertaken.

Ideally, a properly designed database with organization-wide data standards and efforts taken to avoid duplication or inconsistent date elements should have high-quality data. Unfortunately, times are changing, and more organizations allow customers and suppliers to enter data into databases directly via the Web. As a result, most of the quality problems originate from data input such as misspelled names, transposed numbers, or incorrect or missing codes.

An organization needs to identify and correct faulty data and establish routines and procedures for editing data in the database. The analysis of data quality can begin with a data quality audit, in which a structured survey or inspection of accuracy and level of completeness of data is undertaken. This audit may be of the entire database, just a sample of files, or a survey of end users for perceptions of the data quality. If during the data quality audit files are found that have errors, a process called data cleansing or data scrubbing is undertaken to eliminate or repair data. Some of the areas in a data file that should be inspected in the audit and suggestions on how to correct them are presented in Table 4.6.

Data Inspection Items	Description and Cleansing/Scrubbing Recommendation
Current Data	Check to make sure the data is current. If it is out of date, remove it.
Completeness	Check to see if there is missing data. If more than 50 percent is missing, remove the entire file from the database.
Relevance	Check to see if the data is no longer relevant for the purpose for which it was collected. If it's no longer relevant, consider removing it from the database.
Duplication	Check to see if duplicate data files exist in the database. Remove duplicate data.
Outliers	Check for extreme values (outliers) in quantitative data files for possible errors in data coding. Remove from the data file any suspected of being in error, or repair the data.
Inconsistent Values	If data fields contain both characters and real numbers data where only characters or numbers should be, explore repairing the data.
Coding	If suspicious or unknown coding of data exists in data files, remove from the database or repair the coding of data.

Table 4.6 Quality Data Inspection Items and Recommendations

Measuring Business Analytics Contribution

The investment in BA must continually be justified by communicating the BA contribution to the organization for ongoing projects. This means that performance analytics should be computed for every BA project and BA team initiative. These analytics should provide an estimate of the tangible and intangible values being delivered to the organization. This should also involve establishing a communication strategy to promote the value being estimated.

Measuring the value and contributions that BA brings to an organization is essential to helping the firm understand why the application of BA is worth the investment. Some BA contribution estimates can be computed using standard financial methods, such as payback period (how long it takes for the initial costs to be returned by profit) or return on investment (ROI) (see Schniederjans et al., 2010, pp. 90–132), where dollar values or quantitative analysis is possible. When intangible contributions are a major part of the contribution being delivered to the firm, other methods like cost/benefit analysis (see Schniederjans et al., 2010, pp. 143–158), which include intangible benefits, should be used.

The continued measurement of value that BA brings to a firm is not meant to be self-serving, but it aids the organization in aligning efforts to solve problems and find new business opportunities. By continually running BA initiatives, a firm is more likely to identify internal activities that should and can be enhanced by employing optimization methodologies during the Prescriptive step of the BA process introduced in Chapter 1, "What Is Business Analytics?" It can also help identify underperforming assets. In addition, keeping track of investment payoffs for BA initiatives can identify areas in the organization that should have a higher priority for analysis. Indeed, past applications and allocations of BA resources that have shown significant contributions can justify priorities established by the BA leadership about where there should be allocated analysis efforts within the firm. They can also help acquire increases in data support, staff hiring, and further investments in BA technology.

Managing Change

Wells (2000) found that what is critical in changing organizations is organizational culture and the use of change management. Organizational culture is how an organization supports cooperation, coordination, and empowerment of employees (Schermerhorn, 2001, p. 38). Change management is defined as an approach for transitioning the organization (individuals, teams, projects, departments) to a changed and desired future state (Laudon and Laudon, 2012, pp. 540–542). Change management is a means of implementing change in an organization, such as adding a BA department (Schermerhorn, 2001, pp. 382–390). Changes in an organization can be either planned (a result of specific and planned efforts at change with direction by a change leader) or unplanned (spontaneous changes without direction of a change leader). The application of BA invariably will result in both types of changes because of BA's specific problem-solving role (a desired, planned change to solve a problem) and opportunity-finding exploratory nature (unplanned new knowledge opportunity changes) of BA. Change management can also target almost everything that makes up an organization (see Table 4.7).

Data Inspection Items	Description and Cleansing/Scrubbing Recommendation
Current Data	Check to make sure the data is current. If it is out of date, remove it.
Completeness	Check to see if there is missing data. If more than 50 percent is missing, remove the entire file from the database.
Relevance	Check to see if the data is no longer relevant for the purpose for which it was collected. If it's no longer relevant, consider removing it from the database.
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Inconsistent Values	If data fields contain both characters and real numbers data where only characters or numbers should be, explore repairing the data.
Coding	If suspicious or unknown coding of data exists in data files, remove from the database or repair the coding of data.

Table 4.7 Change Management Targets*

It is not possible to gain the benefits of BA without change. The intent is change that involves finding new and unique information on which change should take place in people, technology systems, or business conduct. By instituting the concept of change management within an organization, a firm can align resources and processes to more readily accept changes that BA may suggest. Instituting the concept of change management in any firm depends on the unique characteristics of that firm. There are, though, a number of activities in common with successful change management programs, and they apply equally to changes in BA departments, projects, or teams. Some of these activities that lead to change management success are presented as best practices in Table 4.8.

Best Practice	Description
Champion	Change is scary business for some, and a strong leader for change can champion the change effort, calming fears and explaining the need for change. The champion also helps direct efforts, motivate change, and keep the change activities on track.
Clearly Stated Goals	Any type of change should be clearly defined, including what the changes are, which personnel have to change, and what the processes involve and how they affect technology. This would also include deadlines needed to keep the change effort on track.
Good Communication	To avoid resistance to change (a natural norm to anything that is new), it is useful to help those facing the change understand its value through effective and repeated communications, keeping them informed on progress and easing fears.
Measured Performance	Any goals stated prior to the launch of change can be used to measure performance during the changeover period. Seeing business performance improve with changes can motivate further change and support by those impacted.
Senior Management Support	Critical to all BA departments, projects, or teams is the need for senior management to support change efforts. Sometimes that support is in direct dollars, and sometimes it's in lending authority to get resources needed for BA work.

Table 4.8 Change Management Best Practices