

: *What is the best data analytics approach?*

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Selecting the most appropriate data analytics approach and tools for a specific task or project can be very challenging. The approach that is the best fit depends upon many factors including the need and objective, data availability, training and background of current data analysts, vendor support, and the industry/type of the organization. What criteria should you use for making a choice? How do you weight various criteria? Choosing the wrong approach and tools often results in a difficult and incorrect analysis. Analytics is about asking specific questions and finding the best answers. A question asking technique should be used for choosing analytics approaches and tools.

Many managers consider data an asset. Indeed, modern managers are becoming more strategic about the capture, storage and value extraction from data. This strategic approach typically means leveraging large data sets to extract insightful information that was previously unknown. These insights are used to maintain or create competitive advantage for the organization. Data analytics may provide results to identify new markets, new products and services, opportunities to grow revenue, and opportunities to drive down costs with the end goal of boosting organizational performance.

The perceived importance or value of the data is relative to the industry sector, however the importance of customer data transcends organisational and industry boundaries. Considering the realm of customer data, a variety of data analytics tools are available. Making a decision on customer analytics is heavily contingent on the type of data available and the business need/aim.

Data analytics applies tools like data mining, predictive analytics and machine learning to sets of data that often contain unstructured and semi-structured data. In a Forbes article, Bernard Marr (2016) sets out six approaches to data analytics. In considering these approaches it is important to understand when specific data analytics tools should be used. We have briefly assessed these approaches in terms of the nature of the data available and the business goal(s):

1. Business experiments: Testing ideas is often a goal of data analytics. A business experiment approach is used to test the validity of an idea. This may be a strategic hypothesis, a new product package or a marketing campaign. Davenport (2009) advocates a “test and learn” approach to conducting business experiments noting that experiment design is key to generating a sound evidence base. Use a business experiment approach when you seek to test ideas systematically and gather additional information before you commit significant resources to a project. When considering business experiments managers need to identify the pros and cons of this approach based on the business objective.

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2. Causal analysis: Finding causes helps understand a situation so changes or prediction is possible. Regression is a primary causal analysis tool that is useful when understanding and/or prediction is required and adequate data is available on plausible predictor variables. Regression is a statistical tool for investigating the relationship between variables. For example, managers might use regression analysis to understand the causal relationship between price and product demand. When a complex situation is data rich and managers want better understanding use casual analysis.

3. Correlation analysis: This is a statistical technique that allows managers to determine whether there is a relationship between two separate variables. It also helps to determine the strength of the relationship between the variables. We might use correlation analysis to understand if there is a relationship between positive customer experience and customers sensitivity to changes in the price of a product or service.

4. Forecasting analysis: This approach uses a series of data values to forecast or predict other values. For example, managers may use sales data from the past to predict future sales values. Perform a forecasting analysis when the primary goal is estimation of a variable(s) of interest at some specified future date.

5. Scenario analysis: Allows managers to consider “what-if” questions by analyzing a variety of possible future events or scenarios considering possible alternate outcomes (Power and Heavin, 2017). Scenario analysis is often used where there are numerous possible courses of action and a high degree of uncertainty about the potential outcome.

6. Visual analytics: Data can be analyzed in different ways and the simplest way is to create a visual or graph as a means of identifying patterns or trends in the data. This is an interdisciplinary approach integrating data analysis (typically automated) with data visualization and human interaction. Data visualization is effective where managers are interested in deriving insights from large volumes of data. For example, a sales manager could use an interactive map to better understand customer purchasing behaviours by region.

Business analytics or data analytics are terms used for a systematic process of purposefully examining and using data sets. Often the goal is to draw conclusions about the underlying meaning or implications of the data. Business analytics emphasizes business uses of analytics, while data analytics has a broader focus across organizations and settings. There is no single best approach for meeting every analysis goal. Once the most appropriate data analytics approach for a specific situation is selected, a manager or analyst must select data analytics tools and technologies to conduct the analysis. There are many data analytics and business intelligence software tools

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available and many of them are open source and widely available. As a decision maker it is useful to consider the technologies currently available and the technical capabilities available in-house before going to the market for new software tools or to hire experts.

In our recent article on current trends in data analytics, we highlight that managers and analysts continue to investigate new opportunities in visual data discovery and data storytelling (Heavin and Power, 2017). Moving beyond traditional graphs and charts, sophisticated data visualization technologies promote new ways of telling a business story from data insights to data visualization. Data analytics approaches are evolving.

References

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