Chapter 2
The Rise of Embedded Analytics:
Empowering Manufacturing and Service Industry With Big Data

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ABSTRACT

The internet revolution, cloud computing, and the evolution to self-service analytics have all contributed to the changing dimensions of business intelligence. To compete effectively in a digitally driven world, business leaders must understand and address the critical shifts taking place in the field of analytics, and how these shifts impact their overall strategy. The key objective of this chapter is to propose a conceptual model for successful implementation of embedded analytics in organizations. This chapter also covers some of the potential benefits of analytics, explores the changing dimensions of analytics, and provides a guide to some of the opportunities that are available for using embedded analytics in business. Furthermore, this study reviews key attributes of a successful modern analytics platform and illustrates how to overcome some of the key challenges of incorporating embedded analytics into an analytic strategy in business. Finally, this study highlights successful implementation of analytics solutions in manufacturing and service industry.

INTRODUCTION

The past few years have seen an explosion in business use of analytics. Corporations around the world are using analytical tools, including business intelligence (BI), dashboards and data mining, to gain a better understanding of their present customers and to predict who will potentially become customers. It was predicted that 2017 would mark the rapid proliferation of enterprises using business intelligence

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and analytics to predict the future with an acceptable level of reliability (IDC, 2017). With the help of new analytics tools that leverage analytics for specific purposes enterprises can leverage analytics to drive a host of business objectives, from better decision making to streamlined operations, to improved customer relations. In fact, Big Data analytics will transform virtually every business activity, and bring businesses benefits including enhanced customer service, optimized production levels, superior capacity planning, reduced repair and maintenance costs, and improved working capital utilization. Several research studies have documented the advantages and widespread applications of analytics tools in corporations around the world (Evelson and Bennett, 2015; Gaitho, 2017; Lebied, 2016; Eckerson, 2016; Henke, at al., 2016; Minelli, et al., 2013).

According to a 2016 Forester study of 116 professionals with knowledge of business intelligence in their organizations, 35 percent of correspondents enjoyed an ROI of 25-100 percent on their analytics investment whereas 13 percent enjoyed and ROI of 100-300 percent. According to the same research study, 19 percent of respondents had the estimated payback time period on their analytics investment of less than a year, 32 percent had payback period of 1-3years, and 15 percent realized a payback period of 3 or more years. Professionals who participated in the study identified resource utilization to increase yield, IT cost savings/avoidance, risk avoidance, and human resource utilization as typical cost savings/cost avoidance of implementing analytics in their organizations. The top three tangible analytics benefits were identified as: increased margin, profitability, and increased gross sales (Evelson and Bennett, 2015).

In a similar study, McKinsey investigated the returns on Big Data and analytics investments for a random sample of 714 companies around the world. The results indicated that these companies gained competitive intelligence on future market conditions, targeted customers more successfully, and optimized operations and supply chains. Data-analytics investments significantly increased value-added or operating profits in the 6 percent range. Another important finding of this study is that putting analytics tools in the hands of as many different kinds of frontline employees as possible (democratizing usage) will yield broad performance improvements (Bughin, 2016).

Traditional business analysis is undergoing major changes. We are evolving from static and passive reports of what happened to proactive analytics with real-time dashboards to see what is happening every second. The factors that have contributed to underlying shifts include large volumes of data, the Internet, the evolution to the Cloud, and the changing demands of customers. The Internet revolution has created an environment where consumers want even more information and have greater expectations. Management wants fast answers, and analysts expect the data now, without latency. A new genre in BI tools has emerged. Modern BI tools offer data exploration and rapid prototyping. These new tools empower users to choose when, where, and how they interact with an organization.

According to Gartner (2018), "Embedded analytics is the use of analytic and reporting capabilities in transactional business applications." Although most organizations already empower their employees with analytics tools to access data and improve decision making, many are now embedding analytics into their core business applications. The objective is twofold; first, to broaden their reach and second, to improve the timeliness of insights. Embedded analytics is not a new concept. However, the technology for the integration of reports, charts, dashboards, and self-service tools has evolved rapidly over the past 30 years.

Although the current users of embedded analytics are primarily large corporations, there are numerous additional industries and organizations where embedded analytics tools could advantageously assist