

# Chapter 12

## The Intersection of Data Analytics and Data-Driven Innovation

**Marcus Tanque**

*Independent Researcher, USA*

**Harry J. Foxwell**

*George Mason University, USA*

### ABSTRACT

*This chapter discusses businesses, key technology implementations, case studies, limitations, and trends. It also presents recommendations to improve data analysis, data-driven innovation, and big data project implementation. Small-to-large-scale project inefficiencies present unique challenges to both public and private sector institutions and their management. Data analytics management, data-driven innovation, and related project initiatives have grown in scope, scale, and frequency. This evolution is due to continued technological advances in analytical methods and computing technologies. Most public and private sector organizations do not deliver on project benefits and results. Many organizational and managerial practices emphasize these technical limitations. Specialized human and technical resources are essential for an organization's effective project completion. Functional and practical areas affecting analytics domain and ability requirements, stakeholder expectations, solution infrastructure choices, legal and ethical concerns will also be discussed in this chapter.*

### INTRODUCTION

There has been an increase in the integration of the technology labor force, autonomous machines, and computing devices in the last decade. The intersection of technology and labor force is due to enhanced technological innovations that continues to be observed in recent years (Organization, 2015). This chapter examines data analytics management and data-driven innovation (Desjardins, 2017). The juncture of technology and human capital spans disruptive technology evolution and challenges as well as trends affecting data analytics management and data-driven innovation (OECD, 2015). It also emphasizes

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big data analytics, data-driven innovations, organizational and technical challenges. This technology trend also addresses domain ability requirements, stakeholder expectations, legal & ethical concerns, and solution infrastructure decision methods and techniques. This chapter discusses underlying data analytics evolution, data-driven innovations, and trends (Desjardins, 2017). The next section discusses the background of the chapter.

## **BACKGROUND**

Applying the right knowledge to questions and challenges is vital for producing actionable data collection results. Data analytics is a process of parsing, purging, cleansing, moving, and visualizing information (OECD, 2015; Desjardins, 2017). The process further builds on the goal of assembling valuable and actionable data (OECD, 2015; Rankin, 2013; Maydon, 2017). The chapter also emphasizes data analytics methods and procedures used in the modern-day technology landscape. It underlines regulations, analytics methods, and the level of management oversight decision makers need to deliver successful project outcomes (Maydon, 2017). Data analysis is a term that describes the end-to-end domain process. Hence, this method applies to analysts and data scientists who have valuable capabilities to acquire, process, visualize, and interpret small and large datasets. The following segment focuses on data analytics' evolution, challenges, techniques, opportunities, and trends.

### **Data-Driven Innovation**

Data-Driven Innovation (DDI) is a process of generating innovative outputs or amount of produced data. DDI encompasses advanced applications deriving from data analytics. For many years, this method has increased the production rate in the digital age. This growth is due to continued progress made in information and communications technology, data science, and research and development domains. This innovation would have never been possible without enormous technology contributions that Amazon, Apple, Google, Microsoft, Facebook, IBM, Dell Inc., Tweeter, and others have made in recent years. These multinational corporations have made considerable progress in data-driven analytics and related domains of ability. These technology indicators and trends have led to new data analytics' discoveries spanning various industries: healthcare, banking, cyber, defense, social media, engineering, aviation, telecom, automobile, entertainment, research & development, education, oil and gas, real estate, supply chain, forensics, law enforcement, aerospace, and others. DDI processes and effects consist of:

- **Current Data**
  - Internal Data Sets
  - External Data Sets
  - Government Data
  - Open Data
  - Fee-only Data Sets
- **Data Processing and Analysis**
  - Computers
  - Keyboards/Consoles
  - Tables

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