

Chapter 41

Skills and Competencies Required for Jobs in Business Analytics: A Content Analysis of Job Advertisements Using Text Mining

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ABSTRACT

The explosive growth of business analytics has created a high demand for individuals who can help organizations gain competitive advantage by extracting business knowledge from data. What types of jobs satisfy this demand and what types of skills should individuals possess to satisfy this huge and growing demand? The authors perform a content analysis of 958 job advertisements posted during 2014-2015 for four types of positions: business analyst, data analyst, data scientist, and data analytics manager. They use a text mining approach to identify the skills needed for these job types and identify six distinct broad competencies. They also identify the competencies unique to a particular type of job and those common to all job types. Their job type categorization provides a framework that organizations can use to inventory their existing workforce competencies in order to identify critical future human resources. It can also guide individual professionals with their career planning as well as academic institutions in assessing and advancing their business analytics curricula.

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INTRODUCTION

Business Analytics combines aspects of statistics, management science and information systems in order to help managers make better decisions and allow businesses to gain competitive advantage based on analysis of data. Businesses are now dealing with “Big Data”, a huge volume and variety of data that are arriving at high velocity and are growing at an exponential rate. Companies are realizing that data, both big and small, if processed and analyzed appropriately, can be turned into useful information to gain valuable business insights and unveil opportunities for realizing significant competitive advantage (IBM Website, 2014). Organizations that are successfully implementing analytics competitively tend to have a data oriented culture as well as competencies in information management and analytic expertise (Kiron & Shockley, 2011). The growth in business analytics has created a high demand for so called “data scientists” or individuals who possess skills for transforming large amounts of data into business knowledge using sophisticated data processing, analysis and modeling tools. Davenport and Patil (2012) have described data scientist positions as the “sexiest job of the 21 Century” and have projected that the demand by business for “deep analytical positions” could exceed supply by 140,000 – 190,000 positions by 2018 along with a shortfall of 1.5 million data-savvy managers who can analyze data to make effective decisions.

There is a definite need in the industry for persons skilled in business analytics tools and techniques and the future career paths for people with the necessary skillsets seem to be very bright. But what knowledge and skillsets are organizations actively searching for in the workforce to help them move towards gaining a competitive advantage with business analytics? What types of jobs fill this demand and what types of skills should individuals prepare themselves for to satisfy this huge and growing demand? The electronic and Internet revolution has ushered us into the age of “Big Data,” but do all job positions in the area of business analytics need those big data skills? Have the responsibilities typically associated with certain job positions broadened to include new skills associated with analytics? The continuously changing nature of the field and the increasing complexity of the business analytic tools and applications continue to demand updates of the relevant skills and competencies required for the various types of business analytics job positions.

In this paper we attempt to identify and characterize the skills and competencies currently required in the workplace for various types of job positions in business analytics and present the characteristics of business analytics competencies for each of those job positions. The analysis is based on 958 positions advertised during 2014-2015 on Monster.com and Indeed.com, the top two most popular and largest job search websites in the US. We have restricted our sample to only US based positions and used the umbrella term business analytics to include four main types of jobs in our search, namely business analyst, data analyst, data scientist, and data analytics manager. We used text mining tools and techniques to identify keywords and phrases in the advertisements to develop a detailed framework of the job requirements from which we then identify the broad types of skills needed by the four job types. The job type categorization provides a framework that organizations can use to inventory their existing workforce skills in order to identify critical future human resources. It also establishes a benchmark to assess the different programs created by academia in preparing individuals for these different job positions.

In the following section, we review the research carried out on the demand as well as the supply side of the skills and competencies needed in business analytics. The demand side is determined by the need in the market place or businesses’ needs for business analytics while the supply side is typically

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