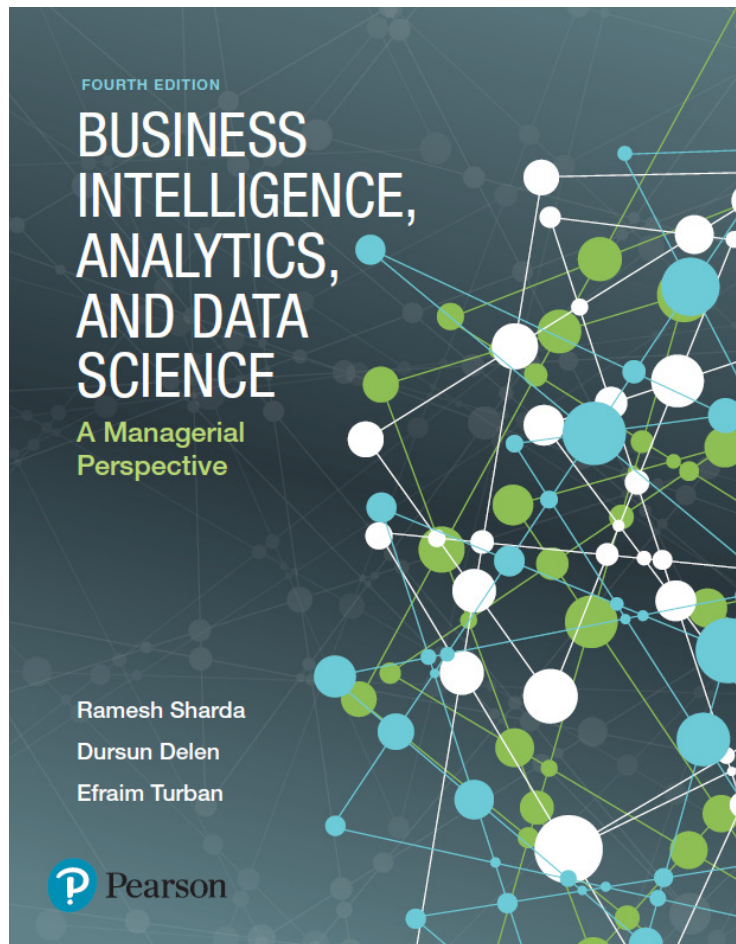# Business Intelligence, Analytics, and Data Science: A Managerial Perspective

Fourth Edition

Chapter 8 – Part B

Future Trends, Privacy and Managerial Considerations in Analytics

Issues of Legality, Privacy, and Ethics

- **Legal** issues to consider
    - What is the value of an expert opinion in court when the expertise is encoded in a computer?
    - Who is liable for wrong advice (or information) provided by an intelligent application?
    - What happens if a manager enters an incorrect judgment value into an analytic application?
    - Who owns the knowledge in a knowledge base?
    - Can management force experts to contribute their expertise?

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Issues of Legality, Privacy, and Ethics

- Privacy - The right to be left alone and the right to be free from unreasonable personal intrusions
    - Collecting information about individuals
        - How much is too much?
    - Mobile User Privacy
        - Location-based analysis/profiling
    - Homeland Security and Individual Privacy
    - Recent Issues in Privacy and Analytics
        - "What They Know" about you (wsj.com/wtk)
        - Rapleaf (rapleaf.com), X + 1 (xplusone.com), Bluecava (bluecava.com), reputation.com, sociometric.com...
    - Who owns our private data?

Issues of Legality, Privacy, and Ethics

- Ethics in Decision Making and Support
  - Electronic surveillance
  - Software piracy
  - Invasion of individuals' privacy
  - Use of proprietary databases
  - Use of knowledge and expertise
  - Accessibility for workers with disabilities
  - Accuracy of data, information, and knowledge
  - Protection of the rights of users
  - Accessibility to information
  - Personal use of corporate computing resources
  - … more in the book

Impacts of Analytics in Organizations

- Analytics revolution → Cultural transformation
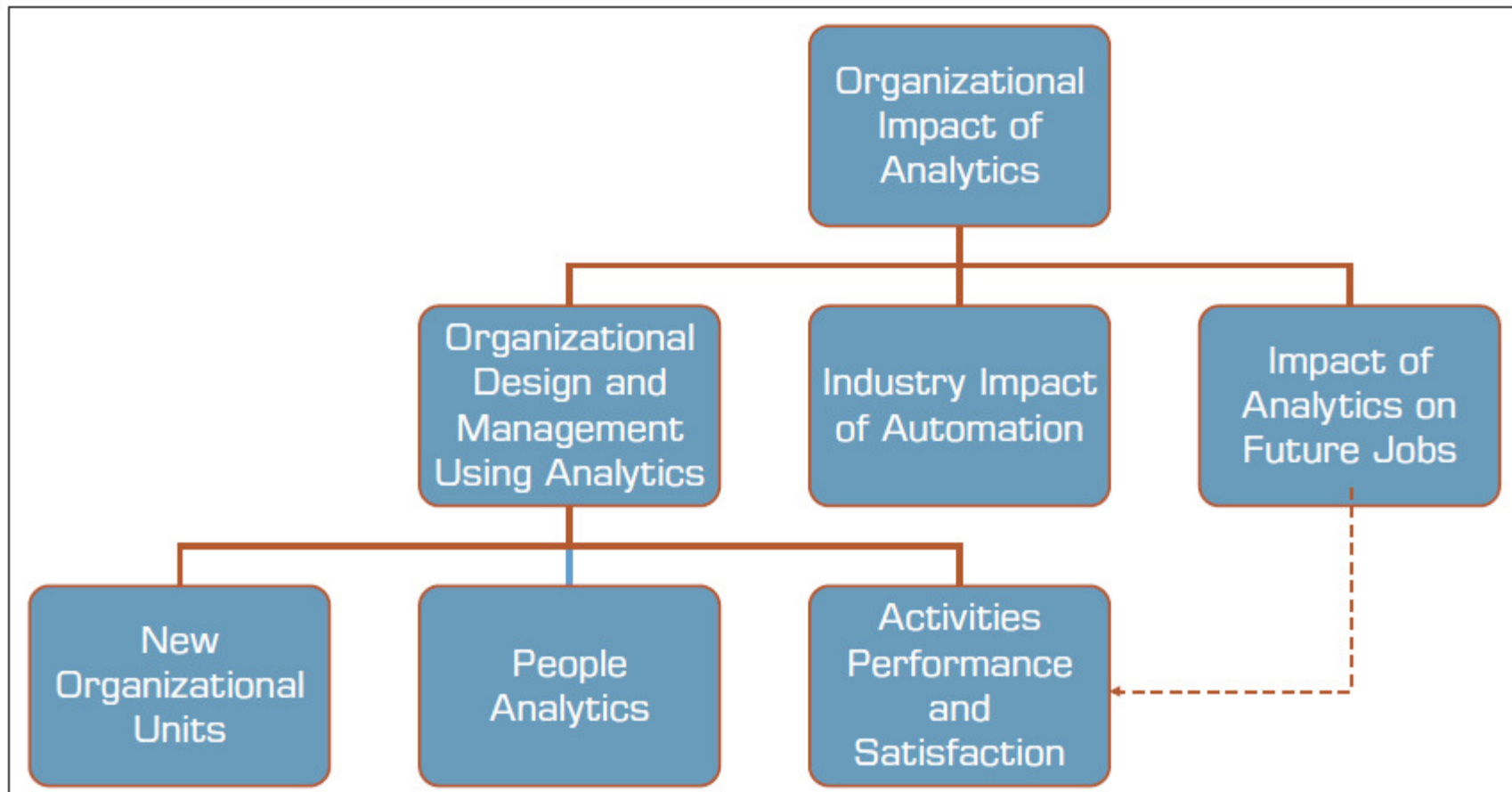
Impacts of Analytics in Organizations

- New Organizational Units
  - BI department
  - Data science department

- Redesign of an Organization through the Use of Analytics
  - People analytics
  - HR analytics

- Analytics Impact on Managers' Activities, Performance, and Job Satisfaction
  - Data/fact/analytics driven decision

Potential Impacts of Analytics on Managers

- Less expertise/experience is requirement

- Faster decision making (augmented with analytics)

- Less reliance on experts and analysts (data rules!)

- Power is being redistributed among managers

- Support for complex decisions makes them faster to develop and be of better quality

- Information needed for high-level decision making is expedited or even self-generated

- Automation of routine decisions or phases in the decision-making process may eliminate some managers

Impacts of Analytics in Organizations

- ## Industrial Restructuring
    - AI, analytics, and cognitive computing can change the industry in a fundamental way

- ## Automation's Impact on Jobs
    - Data science and AI will change the nature of human jobs (another wave of automation is in the horizon)

- ## Unintended Effects of Analytics
    - Social and long-term effects of the models
    - "Weapons of Math Destruction: How Big Data Increases Inequality and Threatens Democracy"

Data Scientist as a Profession

"The Sexiest Job of the 21st Century"

Thomas H. Davenport and D. J. Patil

Harvard Business Review, October 2012

- Data Scientist = Big Data guru
  - One with skills to *investigate* Big Data

- Very high salaries, very high expectations

- Where do Data Scientists come from?
  - M.S./Ph.D. in MIS, CS, IE,… and/or Analytics
  - There is not a specific degree program for DS!
  - PE, PML, … DSP (Data Science Professional)

Skills That Define a Data Scientist

Slide 8-10
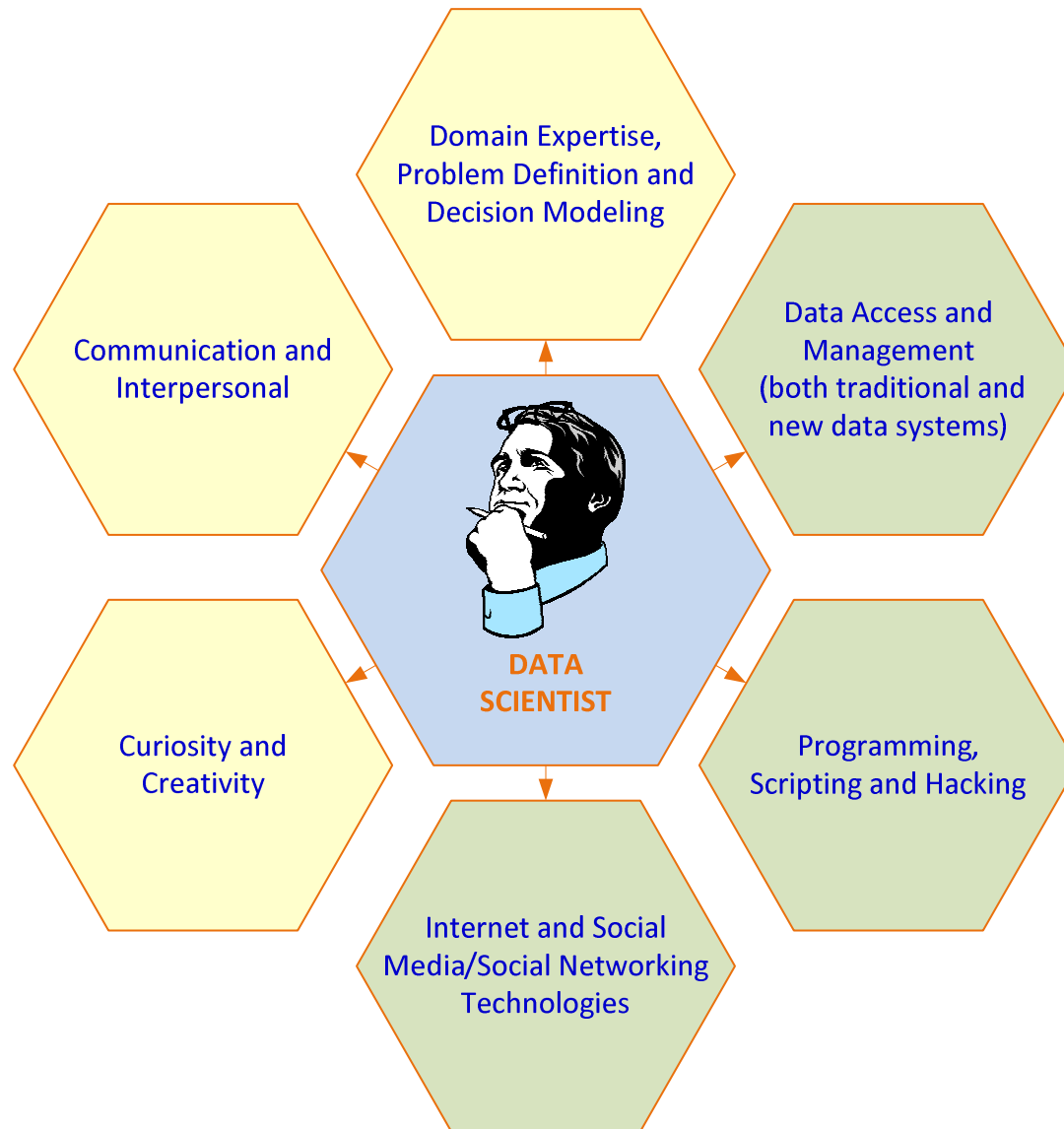
A Typical Job Post for Data Scientist

TECHNOLOGY INSIGHTS 8.1
A Typical Job Post for Data Scientists

[Some company] is seeking a Data Scientist to join our Big Data Analytics team. Individuals in this role are expected to be comfortable working as a software engineer and a quantitative researcher. The ideal candidate will have a keen interest in the study of an online social network and a passion for identifying and answering questions that help us build the best products.

Responsibilities

- Work closely with a product engineering team to identify and answer important product questions
- Answer product questions by using appropriate statistical techniques on available data
- Communicate findings to product managers and engineers
- Drive the collection of new data and the refinement of existing data sources
- Analyze and interpret the results of product experiments
- Develop best practices for instrumentation and experimentation and communicate those to product engineering teams

Requirements

- MS or PhD in a relevant technical field, or 4+ years of experience in a relevant role
- Extensive experience solving analytical problems using quantitative approaches
- Comfort with manipulating and analyzing complex, high-volume, high-dimensionality data from varying sources
- A strong passion for empirical research and for answering hard questions with data
- A flexible analytic approach that allows for results at varying levels of precision
- Ability to communicate complex quantitative analysis in a clear, precise, and actionable manner
- Fluency with at least one scripting language such as Python or PHP
- Familiarity with relational databases and SQL
- Expert knowledge of an analysis tool such as R, Matlab, or SAS
- Experience working with large data sets, experience working with distributed computing tools a plus (MapReduce, Hadoop, Hive, etc.)

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Statements about Data Scientists

- Data scientists turn Big Data into big value, delivering products that delight users and insight that informs business decisions.

- A data scientist is not only proficient in working with data, but also appreciates data itself as an invaluable asset.

- By 2020 there will be 4.5 million new data scientist jobs, of which only one-third will be filled because of the lack of people available to fill them.

- Today's data scientists are the quants of the financial markets of the 1980s.