Abstract

How do we know what behavior customers have when buying our products and services? Organizations today are relying on big data and related analytics. The emphasis for data is on the growth in non-numeric data. In fact, some say the rate of growth of non-numeric data is 10 times the numeric data. This explosion of data of all types (text, video, audio, pictures etc.) poses a challenge to managers to effectively make sense of and use the data. Understanding, organizing, integrating and delivering this data is a key issue today. Business must be clear about the use of such data to avoid storing and managing an excess of data.

BIG DATA

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Big data carries with it many implications. The data is much more *time* sensitive than the traditional numeric operational data most organizations maintain. Big data may vary in time value from minutes to years especially when considering media or streaming data, data that represents a quick transaction burst or data that represents complicated real world items such as emails, x-rays, prints, diagrams, photos and sound bites.

Data analytics are techniques that take advantage of the promise of big data. It is more than projecting past performance or assessing likelihood of some action in the future. Today organizations rely on the use of predictive analytics to accelerate performance. These analytics include the methods relating variables to a particular success initiative. Initiatives include understanding what data drives choice of products, what products consumers buy together and what is your image to your customers and the public.

What happens when the data mine is empty? Organizations know when to stop mining gold from a vein, coal from a seam or pumping oil for a well. Is it possible for the data to be useless? How do you deal with renewable data, data that constantly refreshes like consumer buying habits, corporate image and other factors that contribute to success?



This course is key for business managers, strategic planners, marketing analysts, data analysts and architects, planning managers, process analysts, business analysts, business architects, enterprise and IT architects.

Day One

Theme: Strategic use of Big Data

Section 1: The Big Data Journey -Big Data Capability and Business Strategy

- What do we mean by big data
- Characteristics of big data:
 - o Volume, timeliness and accuracy for business decision-making
- The motive: Why are we interested?
- Big Data capability applying the CMM model to big data
- Defining your big data journey
- Using a big data roadmap to manage the journey
- The whole point Where are you going with big data?

Exercise – Defining your big data journey

Section 2: Delivering Big Data to the Business

- Defining the observation space what data can you see?
- The big data infrastructure
 - o Platforms, software tools, skills, support, policies
- The technology environment
 - o Discovery, prediction, streaming, virtualization, databases

Video - Typical Big Data Uses

Section 3: Correlation and Regression – Data that tracks together for prediction

- Big data and correlation
- What types of correlation are there?
- Pearson correlation
- Spearman correlation
- Kendall correlation
- Other types of correlation
- Regression is different!

Exercise –Correlations and regressions and The Abscombe Quartet

Exam -Day 1

Day 2

Theme: Working with what, not why

Section 4: Correlation Matrices - Buyer Preferences

- What is a correlation matrix? What is it used for?
- Ranking opportunities
- Building a correlation matrix
- Selecting the correct correlation algorithm
- Interpreting the results

Exercise – Preparing a correlation matrix

Section 5: Affinity Analysis - The Market Basket Tool for Product Pairing

The affinity idea, what do buying habits depend on?

How do you do an affinity analysis?

What does it tell you?

Interpreting the results

Analyzing buyer product behavior with affinity

Interactive Exercise – Interpreting an affinity matrix

Section 6: Cluster Analysis

- Setting up the problem what data do you have?
- Is the data 'big'? Is it important to be big?
- What data sets track together? Regression and correlation
- Ranking opportunities The value and use of correlation matrices
- How good is the estimate? Understanding confidence and variance
- Consumer behavior Affinity and prediction

Exercise – A simple cluster analysis

Exam -Day 2

Day 3

Theme: Deep Learning Finding Hidden Gems

Section 7: Working with text - Sentiment Analysis

- What is sentiment analysis about emotions
- Sentiment analytics how does it work?
- External perspective of the organization
- Internal perspective of the organization
- Comparative analysis of perspectives
- Interpreting the results

Interactive exercise – Using sentiment analysis

Section 8: What is Deep Learning and what is it for?

- Start with the idea of machine learning
- The goal of deep learning
- Why deep learning now?
- Technology for deep learning
- Who can use this?

Video – What are neural nets and how do they work in big data?

Section 9: How does it work?

- How does it work using neural nets
- Key applications of deep learning
 - o Speech, vision, image processing
- Issues with deep learning
- Some business applications of deep learning
 - o Credit scoring and risk prediction
 - o Fraud detection
 - o Cross selling and upselling
 - o <u>Customer retention</u>
 - Analytics and social media

Q&A and Course Wrap

Exam -Day 3

Learning Objectives

Expected Learning Outcomes (what they will learn):

- Explain the difference between big data and data we manage today
- Understand the trend and use of big data
- Define the business value of big data to your organization
- Explaining the technology available for big data today
- Explain the difference between correlation and affinity and how each is used
- Interpret how sentiment analysis impacts business image
- Design methods that effectively utilize prediction with big data
- Understand the limits of big data
- Interpret social media data to understand market potential
- Identify when the 'data mine' is empty