SCM 651: Business Analytics

Week 10

Agenda

- * Teaching evaluations
- * Peer review
- * Final Exam Next Week - Live ***

- Review of HW4
- Review of Tableau
- Group discussion of articles
  - Business Analytics: Transforming the Role of Management Accountants
  - Elevating Data, Analytics to the C-Suite
- Final Exam topics
- Course Wrap up

Homework #4

1. Logit and probit analysis (see week 9)
2. Moderating effects (week 7)
3. Final logit & probit models with interaction effects (moderating effects), prediction of outcome, sensitivity analysis
4. Neural network analysis
5. Neural network prediction model and sensitivity analysis (new material in handout in week 9)

Week 10 - Review

- Tableau
  - Can connect to Excel, Access, Text files, etc.
  - Joins:
    - Inner joins only create exact matches
    - For left joins, all records in the left table are used to match with those on the right.
    - For right joins, all records in the right table are used to match with those on the left.
  - Differences in data can be highlighted by numbers, picture sizes, colors, etc.
  - Geographic data can be displayed by city, state and country
  - All mathematical calculations can be performed in Tableau
  - Filters can be applied to tables and graphs
  - Dashboards can include tables and graphs simultaneously

Article #1: Business Analytics: Transforming the Role of Management Accountants

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1. What are some external and internal data sources for accountants? (page 3)
2. What are four challenges for accountants using analytics? (page 4)
3. What are five areas for leveraging analytics in accounting? (page 4)

Article #1: Business Analytics: Transforming the Role of Management Accountants

Article #1: Business Analytics: Transforming the Role of Management Accountants

- What are some external and internal data sources for accountants? (page 3)
  - Spreadsheets, CSV files, Access files, SQL queries, ERP data, Google Analytics, Salesforce data, sensors, emails, videos, tweets
- What are four challenges for accountants using analytics? (page 4)
  - Awareness: understanding the value of business analytics to the organization
  - Interoperability: linking structured and unstructured data
  - Security: maintaining data integrity, minimizing the risk to the company's reputation, avoiding lawsuits
  - Analysis quality: minimize garbage-in, garbage-out
- What are five areas for leveraging analytics in accounting? (page 4)
  - Franchise sales analysis
  - Accounts receivable and credit analysis
  - Accounts payable and payment monitoring
  - Mergers and acquisitions
  - Forensic accounting

Article #2: Elevating Data, Analytics to the C-Suite

Article #2: Elevating Data, Analytics to the C-Suite

- What are the steps to elevate a department using analytics? (page 5)
- How should you address non-perfect data? (page 5)
- Should analytics teams be centralized or decentralized? (page 6)

Article #2: Elevating Data Analytics to the C-Suite

Article #2: Elevating Data, Analytics to the C-Suite

- What are the steps to elevate a department using analytics? (page 5)
  - Data first
  - Reporting
  - Analytics
  - Quantitative and predicting modeling
- How should you address non-perfect data? (page 5)
  - Don't wait for 100% perfect data
  - Identify and explain data limitations as part of analysis
- Should analytics teams be centralized or decentralized? (page 6)
  - Centralized for small organizations
  - Decentralized, closer to the business units, for large organizations

Final Exam Topics

- Week 1
  - Background
    - What drives analytics?
    - Why is analytics difficult?
    - What are business examples where analytics is important?
  - Tools
    - Formulas
    - Sorting
    - Filters
    - Pivot tables and charts
    - Powerview

Final Exam Topics

- Week 2
  - NPV
  - IRR
  - Correlation
  - Linear regression
  - Exponential regression
  - Power regression
  - Time series

Final Exam Topics

- Week 3
  - Sensitivity analysis
  - Conditional formatting
  - Dashboards in Excel
  - Google analytics

Final Exam Topics

- Week 4
  - Importing data
  - Access tables
  - Access relationships
  - Access queries
    - Grouping
    - Criteria
    - Calculations

Final Exam Topics

- Week 5
  - PowerPivot importing
  - PowerPivot relationships
  - PowerPivot tables
  - PowerPivot charts

Final Exam Topics

- Week 6
  - Goal seek
  - Solver (unconstrained)
  - Solver (constrained)

Final Exam Topics

- Week 7
  - R: 3D visualization
  - ANOVA
  - Dummy variables
  - Moderating effects

Final Exam Topics

- Week 8
  - Regression Assumptions
    - Know what each looks like
    - Know what a violation looks like
    - Know the solutions to the assumption violation
  - Solutions
    - Linearity
      - Solution: transformation
    - Multi-collinearity
      - Solution: Combine variables or drop one
    - Heteroscedasticity
      - Solution: transformation
    - Serial correlation
      - Solution: Time series analysis
    - Outliers
      - Solution: drop outliers

Final Exam Topics

- Week 8 (continued)
  - Benford's Law
  - Decision trees

Final Exam Topics

- Week 9
  - Logit
    - Logistic distribution
    - More sensitive at extreme values of X variables
  - Probit
    - Normal distribution
    - More sensitive at values of variables near their means
  - Perceptrons
    - Early linear attempt at machine learning

Final Exam Topics

- Week 9
  - Neural networks
    - Uses logistic function
    - Has at least three levels: inputs (X), hidden (H), and outputs (Y)
      - Can have multiple hidden layers (deep neural networks)
    - Subject to local optima

Final Exam Topics

- Week 10
  - Tableau
    - Importing data
    - Creating relationships
    - Tables and charts
    - Dashboards

Final Exam

- Academic integrity
  - Do your own work, no collaboration
- Test breadth of knowledge (multiple choice)
- Test depth of knowledge (short answer)
- Test Taking Strategy
  - Strive for full credit on a question – there is no extra credit for elaborate answers, so don't spend too much time on any question
  - Use your time wisely

Final Exam

- Content
  - Part 1: Concepts – Short Answer
  - Part 2: Tools – Multiple Choice
  - Part 3: Techniques – Multiple Choice
  - Part 4: Regression Assumptions – Multiple Choice
  - Part 5: Interpretation – Short Answer
  - Part 6: Business Issues from Articles – Short Answer
- Summary
  - 15-20 multiple choice questions
  - 15-20 short answer questions

- Final exam will be sent to you via email at your syr.edu address
- You will need MS Word
- You will not run any other software – just answer the questions

Final Exam

- Content
  - Part 1: Concepts – Short Answer
    - Define or describe a concept or business application
  - Part 2: Tools – Multiple Choice
    - Identify which tool was used in a given example (e.g., Excel, Access, Google Analytics, R, Tableau)
  - Part 3: Techniques – Multiple Choice
    - Identify which technique is presented in example (e.g., correlation, linear regression, exponential regression, power regression, moving average, logit, probit, neural network)
  - Part 4: Regression Assumptions – Multiple Choice
    - Identify assumption violations, corrections (linearity, multi-collinearity, heteroscedasticity, serial correlation, outliers)
  - Part 5: Interpretation – Short Answer
    - Interpret output results of a technique
  - Part 6: Business Issues from Articles – Short Answer
    - Provide a short answer to questions from the articles