SCM 651: Business Analytics

WEEK 10

Agenda

*** Teaching evaluations due March 22***

*** Peer review due March 27***

*** Final Exam March 27 during live session 11 ***

Review of hands-on exercises

Group discussion of articles

- Business Analytics: Transforming the Role of Management Accountants
- Elevating Data, Analytics to the C-Suite

Final Exam topics

Course Feedback

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

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

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

- 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

SCM 651: Business Analytics

FINAL EXAM REVIEW

Final Exam

Academic integrity

- Do your own work, no collaboration

My philosophy

- More questions, each worth fewer points
  - Advantage: if you don't know the answer on a question, it's only worth a few points
- 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

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

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

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

Week 6

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

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
- 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

- 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

Upcoming assignments

1. Homework –
Peer Review due by Live Session 11

2. Final Exam

During Live Session 11

Please be sure to provide your input regarding this course! Use the passcode you received via email and submit your feedback.