Data Analytics for Accounting 2nd edition Richardson Solutions Manual

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CHAPTER 1 LABS

Note: Some problems and solutions may be altered in Connect for auto grading purposes.

Lab 1-0 How to complete labs in this book
Lab 1-1 Data Analytics in Financial Accounting
Lab 1-2 Data Analytics in Managerial Accounting
Lab 1-3 Data Analytics in Auditing
Lab 1-4 Comprehensive Case: Dillard's Store Data

Lab 1-0 How to complete labs in this book

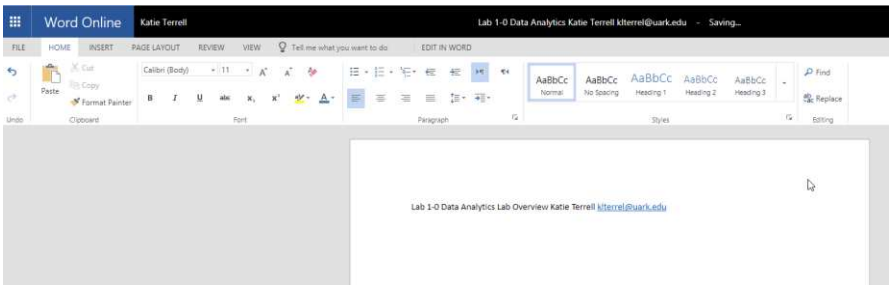
Instructor information: This lab is very simple and exists to help students familiarize themselves with the format of labs and with how to take a screenshot and paste it into a Word Document. This key contains only the screenshots that will be similar to what a student may come up with while completing this lab.

Part 1: Create a new Word document on OneDrive

No Key

Part 2: Take a screenshot of your document

Key screenshot:

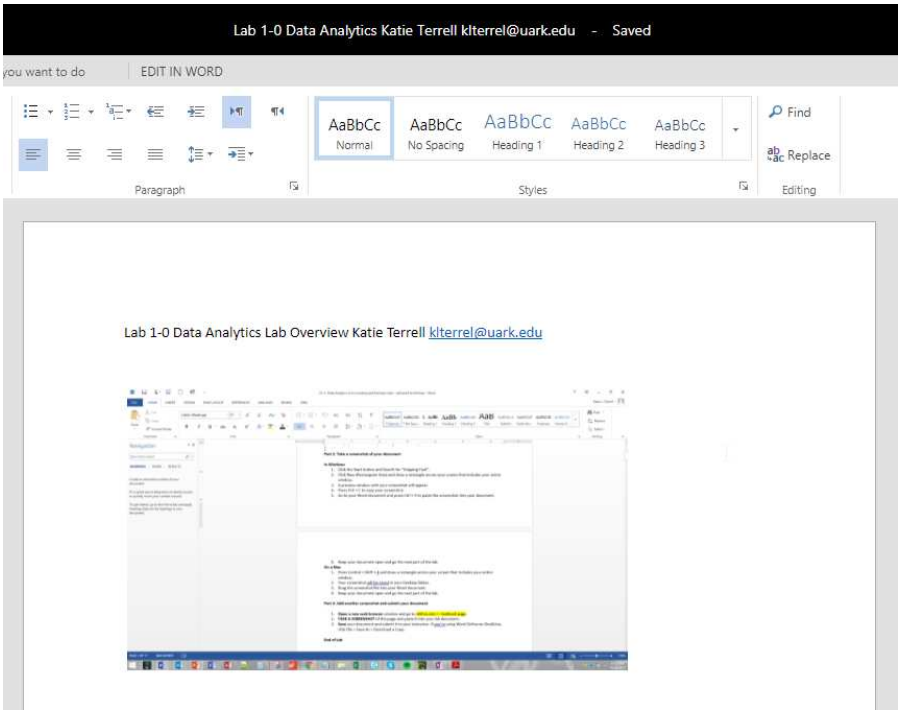


Part 3: Add another screenshot and submit your document

Key screenshot:

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End of Lab

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Lab 1-1 Data Analytics in Financial Accounting

Because every question in this lab is open-ended, there is no key provided.

Example solution:
Part 1: Has [Company X's] gross margin increased in the last three years?
Part 2:

1. ***Apple Inc.'s gross margin has increased slightly in the past three years.***
2. ***Company Name = EntitySectorIndustryClassificationPrimary***
   Gross Margin = GrossProfit
   Sales Revenues = SalesRevenueNet
   Cost of Goods Sold = CostOfGoodsAndServicesSold
   Year = DocumentPeriodEndDate

Part 3:

Financial Statement Analysis

Company 1:

Company 1 Ticker	AAPL	(e.g. MSFT)
Most Recent Year	2017	(e.g. 2014)
Period	FY	(e.g. FY or Q2)
Round to	100,000	(e.g. 100,000)

Apple Inc

Financial Facts	2014	2015	2016	2017
SalesRevenueNet	$ 1,827,950	$ 2,337,150	$ 2,156,390	$ 2,292,340
CostofGoodsAndServicesSold	$ 1,122,580	$ 1,400,890	$ 1,313,760	$ 1,410,480
GrossProfit	$ 705,370	$ 936,260	$ 842,630	$ 881,860

Example Solutions

Part 1: Questions	*Part 2: Hypothesized Answer*	*Part 2: Tables/Fields/Tags*	*Other data:*
Has [Company X's] current ratio increased over the past four years?	*Target's current ratio has increased slightly over the past five years*	*Company Name=EntitySectorIndustryClassificationPrimary* *Current Assets=AssetsCurrent* *Current Liabilities=LiabilitiesCurrent* *Year=DocumentPeriodEndDate*	*None*
What was [Company X's] rate of increase/decrease of gross profit this past year?	*Target's gross profit increased by 3% this past year*	*Company Name=EntitySectorIndustryClassificationPrimary* *Net Income=NetIncomeLoss* *Total Assets=Assets* *Year=DocumentPeriodEndDate*	*None*

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Has [Company X's] debt-to-equity ratio decreased over the past four years?	*Target's debt-to-equity ratio has increased over the past 5 years*	*Company Name=EntitySectorIndustryClassificationPrimary Total Liabilities=Liabilities Stockholder's Equity=StockholdersEquity Year=DocumentPeriodEndDate*	*None*

Financial Statement Analysis

Company 1 Ticker	TGT	(e.g. MSFT)
Most Recent Year	2017	(e.g. 2014)
Period	FY	(e.g. FY or Q2)
Round to	100,000	(e.g. 100,000)

Target Corp

Financial Facts	2014	2015	2016	2017
SalesRevenueNet	$ 726,180	$ 737,850	$ 694,950	$ 718,790
CostofGoodsAndServicesSold	$ 512,780	$ 522,410	$ 491,450	$ 511,250
GrossProfit	$ 213,400	$ 215,440	$ 203,500	$ 207,540
AssetsCurrent	$ 136,240	$ 141,300	$ 119,900	$ 125,400
LiabilitiesCurrent	$ 117,360	$ 126,220	$ 127,070	$ 130,520
Assets	$ 411,720	$ 402,620	$ 374,310	$ 403,030
LiabilitiesNonCurrent	$ 154,390	$ 146,830	$ 137,710	$ 156,000
StockholdersEquity	$ 139,970	$ 129,650	$ 109,150	$ 116,510

Company 1:

Analysis

Sales Revenue - Cost of Goods Sold	213,400	215,440	203,500	207,540
Increase (Decrease) from previous year	0.00%	0.96%	-5.54%	1.99%
Current Ratio	1.16	1.12	0.94	0.96
Increase (Decrease) from previous year	0.00%	-3.57%	-15.71%	1.82%
Debt-to-Equity Ratio	1.10	1.13	1.26	1.34
Increase (Decrease) from previous year	0.00%	2.67%	11.40%	6.13%

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Lab 1-2 Data Analytics in Managerial Accounting

Because every question in this lab is open-ended, there is no key provided.

Example solution:
Part 1:

2. Where does the customer live?
3. Hypothesis: risky customers likely live in coastal towns.
4. City, state, zip code

Part 2:

1. Zip_code, addr_state

Example Solutions

Part 1: Questions	*Part 2: Hypothesized Answer*	*Part 2: Tables/Fields/Tags*	*Other data:*
Does the customer have many credit accounts?	*Risky customers likely have many credit accounts*	*1.customer's member number (member_id)* *2.The number of credit accounts a customer has (total_acc)* *3.The customer's total available credit (revol_bal)*	
How long is the employment time of the customer?	*People with short employment time are potential risky customers*	*1.customer's member number (member_id)* *2.The length of the employment time (emp_length)* *3. the total time of full-time work experience*	*Total employment length*
How long will the customer pay back the loan?	*Risky customers are likely to have longer time for payment.*	*1.customer's member number (member_id)* *2.The time length customers promised to pay back the loan*	*Loan term*

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Lab 1-3 Data Analytics in Auditing

Because every question in this lab is open-ended, there is no key provided.

Example solution:
Part 1:

2. ***Are any shipping managers approving shipments more than two days after they are received?***
3. ***Hypothesis: Only 1 or 2 shipping managers are approving shipments more than two days after they are received.***
4. ***Approver ID, order date, approval date***

Part 2:

3. ***Shipments_Made_YYYYMMDD_YYYYMMDD table and Approved_By, Entered_Date, and Approved_Date fields***

Example Solutions

Part 1: Questions	*Part 2: Hypothesized Answer*	*Part 2: Tables/Fields/Tags*	*Other data:*
How long will it take from receiving sales orders to shipments made?	*Good internal control should take 1-3 days from receiving sales orders to shipments made*	*1.Sales orders date* *2.Shipments date* *3.Sales orders id* *4.Shipments id* *Sales_Orders_YYYYMMDD_YYYYMMDD* *Sales_Order_ID* *Sales_Order_Date* *Shipments_Made_YYYYMMDD_YYYYMMDD* *Shipment_ID* *Shipment_Date*	*None*
What is the percentage of errors to total shipments?	*Good internal control should have error percentage under 1%*	*1.the total number of errors concerning shipments for a quarter* *2.the total number of shipments for a quarter* *3.The shipment id* *Shipments_Made_YYYYMMDD_YYYYMMDD* *Shipment_ID* *Shipment_Period*	*None*
How long will it take from sending sales invoice to opening accounts receivable	*Good internal control should finish the process within one day*	*1.the date of sending sales invoice* *2.invoice id* *3.the date of opening accounts receivable* *4.the customer membership id* *5.the transaction date* *6.the balance amount* *Invoices_Generated_YYYYMMDD_YYYYMMDD*	*None*

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		Invoice_ID ***Invoice_Date*** ***Open_Accounts_Receivable_YYYYMMDD*** ***Customer_Account_ID*** ***Transaction_Date*** ***Balance_Amount***	

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Lab 1-4 Comprehensive Case: Dillard's Store Data

Because every question in this lab is open-ended, there is no key provided.

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Instructor's Resource Manual

Data Analytics for Accounting
2nd Edition

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TO THE INSTRUCTOR

This guide includes suggested assignment schedules, topical outlines, chapter comments and observations, and suggested team exercises based on the authors experience teaching data analytics.

Assignment Suggestions. This textbook is not designed to be a survey of data analytics in accounting. Instead, it is intended to develop student skills to support accountant's roles as data analysts. Consequently, we recommend that the assignments include the problems and labs that will develop these skills and require critical thinking. Different instructors will teach this course differently, some choosing to only use the labs or only include the text. Others hoping to cover this textbook in eight weeks, instead of a full fifteen-week period. The assignment suggestions assume that this material will be covered over fifteen-week period.

Brief Topical Outlines. These outlines are designed to assist instructors in coordinating classroom discussions with material covered in the textbook and the PowerPoints. The Brief Topical Outlines identify topics that we believe are important enough to merit some classroom discussion. The outlines also include references to illustrations in the textbook, PowerPoints, questions, problems, and cases that may serve as useful supplements to your class presentations.

Comments and Observations. You will probably find that our comments and observations suggest coverage of more topics than your time will allow. This is because our comments are drawn from the experiences of three instructors over many semesters. Therefore, we suggest that you borrow from our comments that which appeals to you and discard that which does not.

Course Description and Objectives.

For information only, we use the following course description and objectives:

Course Description

Data Analytics is changing the business world - data simply surrounds us! With so much data available about each of us (i.e., how we shop, what we read, what we've bought, what music we listen to, where we travel, who we trust, etc.), arguably, there is the potential for analyzing that data in a way that can answer fundamental business and accounting questions and create value.

According to the results of 18th Annual Global CEO Survey conducted by PwC, many CEOs put a high value on Data Analytics, and 80% of them place data mining and analysis as the second-most important strategic technology for CEOs. In fact, per PwC's 6th Annual Digital IQ survey of more than 1,400 leaders from digital businesses, the area of investment that tops CEOs' list of priorities is business analytics.[1]

This textbook addresses what we believe will be a similar impact of data analytics on accounting and auditing. For example, we argue that data analytics will play an increasingly critical role in the future of audit. In a recent Forbes Insights/KPMG report "Audit 2020: A Focus on Change", the vast majority of survey respondents believe both that:

1. auditors must better embrace technology and
2. technology will enhance the quality, transparency and accuracy of the audit.

[1] "Data Driven: What students need to succeed in a rapidly changing business world," by PwC, http://www.pwc.com/us/en/faculty-resource/assets/PwC-Data-driven-paper-Feb2015.pdf, posted February 2015, extracted January 9, 2016.

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No longer will auditors be simply checking for errors, misstated accounts, fraud, and risk in the financial statements, or merely report their findings at the end of the audit. Through the use of data analytics, audit professionals will be collecting and analyzing the company's data, similar to the way a business analyst would, to help management make better business decisions. In our textbook, we emphasize audit data analytics and all the testing that can be done to perform audit testing.

Data analytics also potentially has an impact on financial reporting. With the use of so many estimates and valuations in Financial Accounting, some believe that employing Data Analytics may substantially improve the quality of the estimates and valuations. Likewise, the use of XBRL data gives accountants access to more timely and more extensive accounting data for financial analysis.

This textbook recognizes that accountants don't need to become data scientists – they may never need to build a data repository or do the real hardcore data analytics or machine learning – however, we do emphasize seven skills that we believe analytic-minded accountants should have, including the following:

1. Developing an Analytics Mindset - recognize when and how data analytics can address business questions
2. Data Scrubbing and Data Preparation – comprehend the process needed to clean and prepare the data before analysis
3. Data Quality – recognize what is meant by data quality, be it completeness, reliability or validity
4. Descriptive Data Analysis – perform basic analysis to understand the quality of the underlying data and its ability to address the business question
5. Data Analysis through Data Manipulation – demonstrate ability to sort, rearrange, merge and reconfigure data in a manner that allows enhanced analysis.
6. Defining and Addressing Problems through Statistical Data Analysis – identify and implement an approach that will use statistical data analysis to draw conclusions and make recommendations on a timely basis
7. Data Visualization and Data Reporting – report results of analysis in an accessible way to each varied decision maker and their specific needs

Consistent with these skills we desire in all accountants, we recognize that Data Analytics is a process. The process begins by identifying business questions that can be addressed with data, and then test the data, refine our testing and finally, communicate those findings to management. We describe our data analytics process by using an established data analytics model called the IMPACT Cycle, by Isson and Harriott:

1. Identify the Question
2. Master the Data
3. Perform Test Plan
4. Address and Refine Results
5. Communicate Insights
6. Track Outcomes

Course Objectives

After completing this course, students should be able to:

1. Describe in detail the purpose of data analytics and how it can create value for accountants.

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2. Describe the IMPACT model and how it can be used to address most accounting issues that can be addressed by accountants.

3. Demonstrate proficiency in multiple software tools to manage data, perform test analyses, communicate findings through text, tables and visualizations.

4. Explain how data analytics can be used in accounting, auditing, managerial accounting and financial accounting to find patterns, errors, and anomalies and find insights useful to decision making.

5. Describe and demonstrate different types of test approaches that can be used to gather insights in decision making.

Tips on Enhancing the Integrity of Assignments in Lab Screenshots

Throughout the labs, we emphasize the process and analysis of the lab results. As such, we expect students to show their progress through the labs by taking screenshots at various checkpoints throughout the lab. To minimize the possibility of reuse of student work, we require our students to include personally identifiable data in each screenshot, such as a text or sticky note with their name and university e-mail address, to verify the work is theirs. The students will not receive credit for the work without this information. Most Web-based tools, such as Microsoft 365, show the student's name in the corner of the screen when they are logged in, so that is also sufficient. On Windows, students can search for "Sticky Notes" or "Notepad". On a Mac, students should search for "Stickies" or "TextEdit".

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ASSIGNMENT SCHEDULE

Chapter	Topic	Written Assignment	Objective Questions
1	Data Analytics for Accounting and Identifying the Questions	Questions 1-8, 1-13, Problems 1-1, 1-2, 1-3, 1-4	MC 1-1 to 1-10
1	Labs (if time permits)	Lab 1-1 and 1-3	
2	Master the Data	Problem 2-1, 2-3, 2-4, 2-5	MC 2-1 to 2-10
2	Labs (if time permits)	Lab 2-2 and 2-4	
3	Performing the Test Plan and Analyzing the Results	Problem 3-1, 3-3, 3-5. 3-6	MC 3-1 to 3-22
3	Labs (if time permits)	Lab 3-3 and 3-4	
4	Communicating Results and Visualizations	Problem 4-2, 4-3, 4-8 and 4-9	MC 4-1 to 4-15
4	Labs (if time permits)	Lab 4-2 and 4-3	
5	The Modern Accounting Environment	Problem 5-4 and 5-5	MC 5-1 to 5-10
5	Labs (if time permits)	Lab 5-3 and 5-4	
6	Audit Data Analytics	Problem 6-3, 6-5, and 6-7	MC 6-1 to 6-10
6	Labs (if time permits)	Lab 6-3 and 6-4	
7	Managerial Analytics	Problem 7-1, 7-5 and 7-7	MC 7-1 to 7-10
7	Labs (if time permits)	Lab 7-2 and 7-3	
8	Financial Statement Analytics	Problem 8-1, 8-3, and 8-5	MC 8-1 to 8-10
8	Labs (if time permits)	Lab 8-1 and 8-2	
9	Tax Analytics	Problem 9-5 and 9-7	MC 9-1 to 9-10
9	Labs (if time permits)	Lab 9-1 and 9-2	
10	Project Chapter Basic	Flexible	
11	Project Chapter Advanced	Flexible	

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CHAPTER PRESENTATION SUGGESTIONS

CHAPTER 1

1. Data Analytics for Accounting and Identifying the Question

Brief Topical Outline

A. Introduction
   1. What is Data Analytics? (PowerPoints 1-5 – 1-7)
   2. Why does Data Analytics Matter to Business? (PowerPoints 1-8 – 1-10)
   3. Why does Data Analytics Matter to Accounting? (PowerPoints 1-11)
   4. How does Data Analytics Affect Auditing? (PowerPoints 1-12)
   5. How does Data Analytics Affect Financial Reporting? (PowerPoint 1-13)
   6. How does Data Analytics Affect Taxes? (PowerPoint 1-14)

B. Introduction to the IMPACT Model (PowerPoint 1-16 – 1-17)
   1. Identify the Questions (PowerPoint 1-18)
   2. Master the Data (PowerPoint 1-19)
   3. Perform the Test Plan (PowerPoint 1-20)
   4. Address and Refine Results (PowerPoint 1-21)
   5. Communicate Insights (PowerPoint 1-22)
   6. Track Outcomes (PowerPoint 1-23)

C. Data Analytics Skills Needed by Accountants (PowerPoints 1-25 – 1-28)

D. Hands-on Example of the IMPACT Model (PowerPoints 1-29)
   1. Identify the Questions (PowerPoint 1-30)
   2. Master the Data (PowerPoints 1-31 – 1-33)
   3. Perform the Test Plan (PowerPoints 1-34 – 1-37)
   4. Address and Refine Results (PowerPoints 1-38, 39)
   5. Communicate Insights (PowerPoint 1-40)
   6. Track Outcomes (PowerPoint 1-41)

E. Summary – (PowerPoint 1-43)

F. Chapter 1 Lab Introductions – (PowerPoint 1-44 – 1-57)

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Comments and Observations

In our first class meeting, we discuss not only about the role of accountants as information provider, but also how that role is steadily changing to become an interpreter of data. That is, to actively look to data and the interpretation of that data to help answer business problems by deciding what questions need answering, what information needs to be collected to address the question, and what the analysis will entail.

We then start defining data analytics and how it creates value in business and then more specifically what data analytics has done and has the potential of doing in auditing, managerial accounting, financial reporting and taxes. We emphasize the types of accounting questions that exist and how data and data analysis can address them.

We next introduce the IMPACT model. The IMPACT model serves as a foundation for this chapter, and for each remaining chapter. We also use it as a foundation for each of the labs throughout the text. We discuss each of these steps, one by one and talk about what each step entails and why it is important. I like emphasizing the iterative nature of the IMPACT model to reinforce that the data analysis efforts continue as new questions are asked and new data and analyses are available.

We spend some time naming the skills needed by accountants and what we will do in the textbook to help get them there.

We wrap up the chapter by illustrating the IMPACT model with the real-world Lending Club data. We go through each step of the IMPACT model one by one, asking what types of questions Lending Club would likely want answered and focus in on the loan decision of whether to extend a loan or not. The discussion continues by asking what data could be used to answer these questions if we could get any data we wanted, etc. I then jump into the data with them to show them what is there. We talk about data cleaning, data transformation and what assumptions we would need to make to do that. We also do some pivot tables analysis and answer the question of why loans were rejected and inversely why loans are accepted.

While I haven't done it yet, I wondered how the class discussion would change if we started with illustrating the IMPACT model and the Lending Club data. There are always pros and cons of using a flipped classroom model, but it is something that you might consider.

One of the goals of chapter 1 is for the students to open their minds and really learn what data analytics can do for accountants. I believe this chapter provides a good introduction and foundation for what will be included in the textbook and start to address the skills needed.

The presentation ends by introducing the labs that we will cover. I point out why they fit and what they are trying to teach the students.

Suggested Team Exercise

Just as the discussion of the questions that could be answered with data analytics concludes, I have them think of auditing data and think what auditing issues/questions auditors have with sales and how that could they could be addressed with say, a complete sales journal. I think it is helpful for the students to meet in little groups and see if they can address that topic and then report their findings ready for a full class discussion.

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