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Vistabeans coffee shop data analytics teaching case



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ABSTRACT

This case engages you in a data analytics learning activity. You will use data analytics software and a sample dataset to gain an understanding of data analytics and how data analytics can be used to answer important business questions from an accountant's perspective. The intended audience is accounting information systems course students.

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1. Introduction

In this project you will use data analytics software and a sample dataset to gain an understanding of data analytics and then use that knowledge to answer important business questions from an accountant's perspective. Data analytics refers to advanced forms of analysis that can be used to explore large volumes of data and communicate insights. Data are extracted and categorized to identify and analyze behavioral data and patterns, and techniques vary according to organizational requirements. Data analytics is used in many industries to allow companies and organizations to make better business decisions. Data analysis is very different from accounting or financial reporting. Whereas many believe that financial staff or even the chief financial officer (CFO) can instantly perform data analysis, the truth is that it takes a unique skill set to be able to sift through those data and pull out those

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nuggets of critical information that could have an immediate and substantial effect on the profitability of your business.

The accounting profession is surrounded by information that exists quietly in disparate systems, often unused until it is pulled for an audit engagement, or tax return. But if we turn large volumes of data into meaningful insights, organizations can use these findings to improve their businesses in many functions, and accounting professionals would add even greater value. Indeed, accountants need to look beyond traditional business metrics and recognize the commercial potential of embracing a wider set of data. In addition to the essential financial and enterprise data they already work with, accountants will need to review other nontraditional sources of data to gain a more thorough understanding of business performance.

2. Scenario

Vistabeans was formed in 1991 when Eli Smith graduated with a degree in business and decided to use his passion for good coffee to open a coffee shop in his hometown. After a few years, Sarah Jones joined Vistabeans as a part-owner and marketing director. Sarah took Vistabeans to the next level by expanding Vistabeans into new markets. With Eli focusing on products and Sarah focusing on marketing, Vistabeans grew to 150 stores throughout the United States. The mission of each store is to sell the best cup of coffee and other beverages in the area.

Eli and Sarah were happy that their company was growing but they wondered if they were applying their resources in the most profitable manner. Accordingly, they asked their CFO, Alma Nelson, to analyze the company's profitability and prepare a report with recommendations as to how the company can maximize profit.

Alma used the company's accounting information system to create a two-year profit analysis report (Exhibit 1). After reviewing the report, Alma concluded that she needed a deeper understanding of the company's profitability. Alma recalled a report she recently read touting the benefits of data

Exhibit 1

Vistabeans coffee shop profit recap 2012–2013 (in thousands).

	2012 Budget	2012 Actual	2012 Variance \$	2012 Variance%
Sales	\$ 373,080	\$ 401,159	\$ 28,079	7.5%
COGS	158,940	179,336	20,396	12.8%
Margin	214,140	221,823	7,683	3.6%
Total expenses	84,760	115,997	31,237	36.9%
Profit	\$ 129,380	\$ 105,826	\$ (23,554)	–18.2%
	2013 Budget	2013 Actual	2013 Variance \$	2013 Variance%
Sales	\$ 373,080	\$ 418,652	\$ 45,572	12.2%
COGS	158,940	179,336	20,396	12.8%
Margin	214,140	239,316	25,176	11.8%
Total expenses	84,760	113,665	28,905	34.1%
Profit	\$ 129,380	\$ 125,651	\$ (3,729)	–2.9%
	2012 Actual	2013 Actual	2013–2012 Variance \$	2013–2012 Variance%
Sales	\$ 401,159	\$ 418,652	\$ 17,493	4.4%
COGS	179,336	179,336	–	0.0%
Margin	221,823	239,316	17,493	7.9%
Total expenses	115,997	113,665	(2,332)	–2.0%
Profit	\$ 105,826	\$ 125,651	\$ 19,825	18.7%

analytics so Alma decided to use data analytics to help her prepare a report with recommendations as to how the company can maximize profit.

3. Software and data

When you embark on a data analytics project, one of the initial steps will be to select the software that will be used. Fortunately, many software packages exist to help you explore large volumes of data and communicate insights. Software solutions range in functionality, ease of use and price. This case will use Tableau, a data visualization software package used in many organizations. Tableau was selected by Vistabeans for its ease of use for non-technical users. Your instructor will provide instructions regarding access to the software.

Tableau provides free Internet-based training videos on their website (www.tableau.com) to help you learn how to use the software. Your instructor will provide a current list of the best videos to view to complete the project, as well as the current link to view the training videos. The videos should be viewed before beginning the case. You should be able to use Tableau to complete the case requirements after viewing the on-demand training videos. Tableau provides sample data with the software that can be used for additional practice while watching the videos.

Your instructor will provide a Microsoft Access coffee chain data source that you should use to complete the case requirements.

4. Requirements

Assume you are Alma Nelson and use Tableau to analyze Vistabeans profitability. Your deliverables include:

1. Prepare a report with recommendations as to how the company can maximize profit. Your report should include outputs from Tableau. Your report should contain at least 3 visualizations to support your recommendations.
2. Deliver a presentation to Eli and Sarah summarizing how the company can maximize profit. Your presentation should include outputs from Tableau.

5. Teaching notes

5.1. Motivation and learning objectives

Data analytics uses methods for the “extraction, synthesis, integration of information that impacts decision-making and business operations” (Pickard & Cokins, 2015, p. 152). These types of processes are being used more frequently in organizations worldwide to help gain a competitive advantage in the marketplace. Accountants are playing a larger role in the analysis of data since many possess the skills required to synthesize large amounts of data, especially financial information. A recent paper by the Institute of Management Accountants (IMA) and the Association of Chartered Certified Accountants (ACCA) states that there will be many opportunities for accountants to take active, strategic roles within the organization in analyzing data from many sources (Institute of Management Accountants & Association of Chartered Certified Accountants, 2013).

Data analytics has been used in many organizations to find ways to increase overall profitability. Data analytics has been used in marketing to find ways to better target which products should be sold to consumers. The use of analytics has expanded into examining cost structures within the organization. With analytics, many companies are finding ways to further reduce costs that were not evident with the datasets previously available. The use of analytics is changing how audits, either internal or external, are performed. Additional computing power allows auditors to test fuller sets of data rather than small samples and analyze risk assessment more completely (Murphy & Tysiac, 2015).

PWC, a big four accounting firm, ranks data analysis as the “2nd-most important strategic technology” for accountants to understand (PWC, 2015, p. 3). This is reflected by an increased emphasis in standards for higher education for accountants. In the United States, the Association to Advance

Collegiate Schools of Business (AACSB) requires that accounting degree programs include learning experiences that develop skills and knowledge related to the integration of information technology in accounting and business. Included in these learning experiences is the development of skills and knowledge related to “data creation, data sharing, data analytics, data mining, data reporting, and storage within and across organizations” (AACSB, 2013, p. 31). The International Accounting Education Standards also reflect the need for increased information technology and data analytics skills for accountants. These standards state that student should be able to “use information technology to support decision-making through business analytics” (International Accounting Education Standards Board, 2015, p. 37).

This case engages students in a data analytics learning activity. Students use data analytics software and a sample dataset to gain an understanding of data analytics and apply that knowledge to answer important business questions from an accountant’s perspective. The case learning objectives include:

1. Gain an understanding of how data analytics can be used to answer important business questions.
2. Gain an understanding of data analytics software.
3. Develop skills and knowledge related to data analytics from an accountant’s perspective.

5.1.1. Learning objectives mapped to Revised Bloom’s Taxonomy

Table 1 demonstrates how the learning objectives of the case map to the revised Bloom’s taxonomy (Anderson & Krathwohl, 2001). Learning Objective 1 creates the foundation for the case by providing factual knowledge related to data analytics. In addition, Learning Objective 1 ties to conceptual knowledge as students learn how data analytics can be used to answer important business questions. Learning Objective 2 also ties to conceptual knowledge as students learn about data analytics software. Learning Objective 3 significantly ties to procedural knowledge as students learn how to use data analytics software to answer important business questions.

5.2. Implementation guidance

The case is designed as an assignment in an accounting information systems course. Based on eight Accounting Information Systems textbooks that were reviewed, the case fills a void that currently exists. While the textbooks contained coverage of database topics, data analytics projects are usually not included. Discussions of analytics topics were limited to brief inclusions within the database chapters. Most of the coverage of analytics was limited to reviewing business intelligence requirements. There was minimal discussion of tools used for data analytics in any of the textbooks.

This case can enrich the coverage of database topics contained in most accounting information systems courses and can be used as a stand-alone case that students complete on their own or in a classroom setting. If used as a classroom activity, case implementation requires approximately five hours of class time and students will need to spend approximately four to eight hours outside of class to complete the case. The case is best introduced after database topics are discussed. Most accounting

Table 1
Map of learning objectives to Revised Bloom’s Taxonomy.

Knowledge dimensions	Cognitive processes					
	1. Remember	2. Understand	3. Apply	4. Analyze	5. Evaluate	6. Create
Factual		LO1				
Conceptual		LO1, LO2		LO1, LO2	LO1, LO2	LO1
Procedural		LO3	LO3	LO3	LO3	LO3
Metacognitive						

LO1, gain an understanding of how data analytics can be used to answer important business questions; LO2, gain an understanding of data analytics software; LO3, develop skills and knowledge related to data analytics from an accountant’s perspective.