Solutions Manual for Accounting Information Systems 2nd Savage

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CHAPTER 1 Accounting as Information

Learning Objectives

1. Explain how accounting affects both the demand for and supply of information.
2. Compare traditional transaction-based accounting systems to process-based information systems.
3. Explain management's relationship to information and information systems.
4. Describe the relationship between accounting and data analytics.

ANSWERS TO MULTIPLE CHOICE QUESTIONS

1. C

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.1

2. D

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.1

3. A

LO 1, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.1

4. D

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.1

5. C

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.1

6. A

LO 2, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.2

7. B

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.2

8. C

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.2

9. C

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Reporting, Section: 1.2

10. B

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Reporting, Section: 1.2

11. A

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.2

12. B

13. C

LO 3, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.3

14. C

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Communication, AICPA AC: Reporting, Section: 1.3

15. A

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Communication, AICPA AC: Reporting, Section: 1.3

16. A

LO 3, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Communication, AICPA AC: Reporting, Section: 1.3

17. B

LO 3, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.3

18. D

LO 3, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Analytic, AICPA AC: Reporting, Section: 1.3

19. C

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.1

20. B

LO 4, Blooms: Knowledge, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.4

21. C

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.4

22. C

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.4

23. D

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.4

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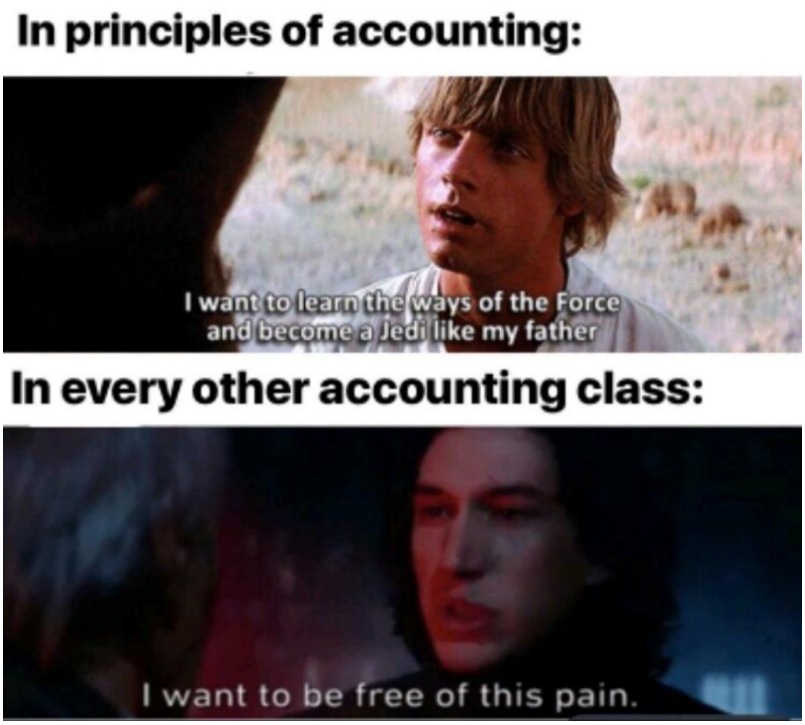
LO 3, Blooms: Comprehension, Difficulty: Easy, TOT: 1 min., AACSB: Technology, AICPA AC: Reporting, Section: 1.3

ANSWERS TO DISCUSSION AND RESEARCH QUESTIONS

DQ1. Student answers will vary. For example:

(1):



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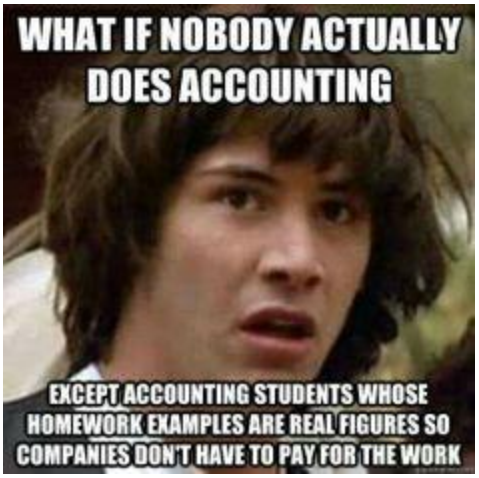
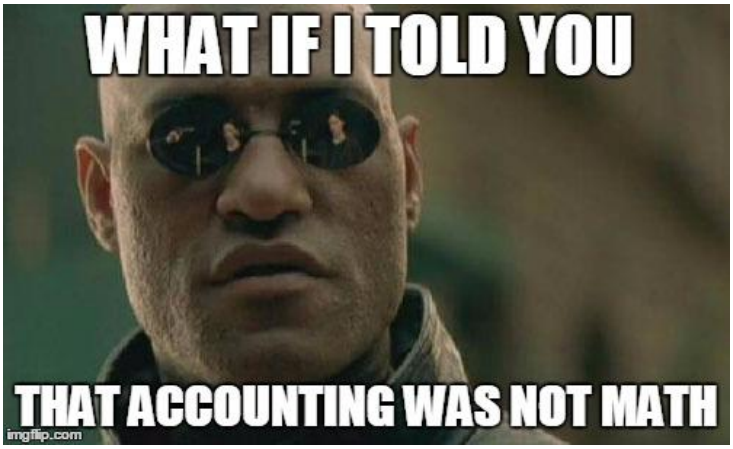


(2):



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LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Communication, AICPA AC: Reporting, Section: 1.1

DQ2. The reality of accounting is that there is a circular flow of cause and effect. What we see here is both demand and supply of information, often in real time due to advances in technology.

(1) From the bottom up, the model shows the supply of information from preparers to users. Economic activity results in accounting judgments, as accountants must make judgment calls about what most accurately reflects the business reality of the economic exchange within the confines of a financial reporting framework like GAAP or IFRS. Recall from your financial accounting course: These judgment calls may involve the use of accounting estimates and the selection of accounting policies.

Examples of estimates are establishing a fair value for an intangible asset, such as goodwill, or determining the allowance for doubtful accounts. Here is an extract from Facebook's 2020 10K report:

Estimating fair value requires judgment and use of estimates such as discount rates, forecast cash flows, holding period, and market data of comparable companies, among others."

An example of the selection of an accounting policy is the recognition of revenue on a gross or net basis. Here is an example from Facebook's 2020 10K report:

Gross vs. Net in Revenue Recognition

For revenue generated from arrangements that involve third-party publishers, there is significant judgment in evaluating whether we are the principal and report revenue on a gross basis or the agent and report revenue on a net basis. In this assessment, we consider whether we obtain control of the specified goods or services before they are transferred to the customer, as well as other indicators such as the party primarily responsible for fulfillment, inventory risk, and discretion in establishing price. The assessment of whether we are considered the principal or the agent in a transaction could impact our revenue and cost of revenue recognized on the consolidated statements of income."

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These judgments affect the usefulness of information and users' decisions. Sound judgments lead to economic prosperity and a more prosperous society. Accounting professionals serve the public interest.

(2) We can also look at the arrows in reverse by emphasizing the demand for information, which starts at the top of the model with users seeking information about economic activity to facilitate decision-making. Examples include the demand to know profits, inventory levels, cash flows, etc. The practice of accounting has consequences, as the decisions that users make based on accounting information result in economic activity, and we have a circular flow starting from the bottom of the model again.

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Communication, AICPA AC: Systems and Process Management, Section: 1.1

DQ3. (1) The overriding purpose of a business is to make a profit and generate enough cash flow to continue operations. Without the profit motive, it would not be a business (at least not for very long). Social responsibility should be at the forefront of businesses' minds as they decide on their strategic plans and objectives. However, businesses, whether they are socially responsible or not, must make a profit to survive.

(2) Student answers will vary, but examples include:

Resources:
Raw materials and manufacturing capabilities
A partnership with an existing backpack fabrication company
RFID tags and RFID middleware
Systems developers, designers, etc. to build mobile apps and supporting systems.

Outputs:
Completed backpacks with RFID sensors embedded in liner
Pencil cases, book covers, etc., with integrated RFID tags.
Stand-alone RFID tags to attach to individual items
A mobile app for configuring your daily schedule and the items you need.

(3) Seed money will be needed to begin manufacturing, though a partnership with an existing backpack fabrication company would be easier. Revenues will include sales of backpacks and items that are scannable. The app will be included with the backpack sale, though a free app with ads is available for download as well in the mobile app store. It provides calendaring and packing list features without the scanning capabilities. Revenues are generated through ad sales.

LO 1, Blooms: Application, Difficulty: Medium, TOT: 20 min., AACSB: Communication, AICPA AC: Systems and Process Management, Section: 1.1

DQ4. A *business process* is group of related *business events* (also called business activities) intended to accomplish the strategic objectives of the business. We can decompose a business process into business events.

A business event in a business process is an activity performed by the business, e.g., "take customer order" (Hint: the description of each business event includes at least a verb and a noun). Examples of business events: take customer order, hire employee, pay employee, pay vendor; declare dividends, pay dividends, get a loan, pay a loan installment, order equipment, receive equipment, acquire a competitor.

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For the acquisition of supplies, a simple business process with three business events could be as follows:

- Event 1: Order supplies from vendor
- Event 2: Receive supplies from vendor
- Event 3: Pay vendor for supplies

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.1

DQ5. The AIS involves a subset of all business data, which makes it one part of a firm's overall information system. While we have many business events or activities in an organization, the AIS uses only the data from business events that result in an economic exchange of resources. Accounting filters and limits the firm's data and limits it to the data reflected in an accounting transaction. What makes AIS unique are aspects such the need for compliance with regulations such as SOX, the need to generate information for financial decision making support, and the need to use it to implement internal controls, among other things.

LO 1, Blooms: Comprehension, Difficulty: Easy, TOT: 5 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.1

DQ6. Student answers will vary.

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Communication, AICPA AC: Systems and Process Management, Section: 1.2

DQ7. The information system, with inputs, processing, storage, and outputs, provides information on how well (or not) the business processes are functioning towards the achievement of the firm's strategic objectives. In a process-based system, the accounting system is part of the overall information system. It is not a stand-alone system. A process-based system stores data about all business events of interest to the firm, including nonfinancial and nonaccounting data. The reports generated by a process-based system are more flexible in format and provide diverse information, depending on their purpose. They include standard accounting reports.

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.2

DQ8. Student answers will vary but examples include:

1. Repay employee's student loans, with amounts depending on levels of performance (human resources).
2. Buy sustainably sourced products (raw materials and supplies).
3. Recycle or reuse supplies (supplies).
4. Volunteer for community services (employees).
5. Conduct responsible research using alternative methods to animals (R&D).

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.2

DQ9. Student answers will vary, but examples include:

1. Reduce energy consumption in manufacturing.
2. Reduce water usage in manufacturing.

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3. Protect manufacturing workers (like welders) from harmful omissions.

4. Manufacture sustainable products.

5. Track carbon footprint.

6. Reduce raw material waste.

7. Eliminate the use of harmful products.

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 10 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.2

DQ10. At this stage, as students have not yet covered ERP systems, the conceptual focus will most likely be on how the business processes determine the information system because the information system captures the data about the business processes in addition to helping execute the business processes. Without business processes to generate business activities or events, there would be no need for an information system!

Students who may have taken an MIS course that includes ERP systems may look at it from the perspective of an ERP system dictating business processes to, this would be fine (e.g., standardizing acquisition and payment processes), this would be fine (e.g., standardizing acquisition and payment processes), but that it could stifle innovation for conversion processes. Firms could lose their competitive advantage if their value-added activities are the same as those of their competitors, as they would not be differentiating themselves.

LO 2, Blooms: Comprehension, Difficulty: Easy, TOT: 5 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.2

DQ11. (1) **Planning** includes (a) developing a strategic plan to create a sustainable competitive advantage, (b) planning business processes focused on achieving strategic goals, (c) identifying key profit drivers and developing benchmark metrics for them, (d) identifying opportunities and assessing their risk, and (e) forecasting future performance.

(2) **Implementation** includes (a) operationalizing the strategic plan by dividing high-level business processes into smaller processes and activities, (b) assigning employees to perform the activities, (c) motivating employees to maximize their performance, and (d) embedding internal controls in processes and systems to prevent and detect errors and fraud.

(3) **Control by monitoring** includes (a) evaluating the results of an activity or an entire business process to see whether they meet expectations, (b) evaluating the operating results to see if the business processes are achieving the organization's objectives, (c) monitoring key performance indicators and comparing them to benchmarks, (d) auditing processes, systems, controls, and transactions, and (e) comparing actual performance and metrics to forecasts and budgets.

(4) **Changing and improving processes** includes (a) changing plans and expectations or changing an activity or a process so that actual results meet expectations, (b) prosecuting occupational fraudsters to the full extent of the law and sending a message of zero tolerance for fraud to management and other employees, and (c) improving internal controls to decrease opportunities for errors and fraud.

Management plans and implements processes to achieve its strategic objectives. The business events and activities embedded in the business processes create data of interest to the firm. The database management

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system (DBMS) captures the data for storage in the database. The data is processed and retrieved in the form of reports, dashboards, and queries. Management uses the information retrieved from the information system (including financial accounting information and cost accounting information) to monitor the business processes to ensure that they do what they are supposed to do. If things go wrong, management takes corrective action to change the business processes, business activities or internal controls. The result is more planning, implementation, monitoring, and changing and improving processes, and the cycle continues.

LO 3, Blooms: Application, Difficulty: Medium, TOT: 20 min., AACSB: Communication, AICPA AC: Systems and Process Management, Section: 1.3

DQ12. Student answers will vary.

Quality information for a business is the degree of fit of the information for a particular purpose in a specified task setting. The information should meet overall expectations for its intended use, subject to cost versus benefit considerations.

My choice of a fundamental characteristic is *faithful representation* or *accuracy*, meaning that the information must correspondent with the facts or occurrences it represents, and be complete, unbiased and free of material error or misstatement.

My choice of an enhancing characteristic is *timeliness*, which relates to the speed at which the information can be available and still be quality information.

Fundamental characteristics are primary, and enhancing characteristics are secondary. The fundamental characteristics make information more useful when compared to enhancing characteristics.

If information is a faithful representation of an organization's financial results and condition (the financial statements), this is a primary characteristic because, regardless of the enhancing characteristics, like issuing the financial statements on time, materially inaccurate financial statements are of no use to decision makers.

LO 3, Blooms: Comprehension, Difficulty: Easy, TOT: 20 min., AACSB: Reflective Thinking, AICPA AC: Systems and Process Management, Section: 1.3

DQ 13. *Possible answers:* Companies can balance profitability with ESG initiatives by making sustainability a central part of their business model rather than viewing it as an additional expense. For instance, energy efficiency, waste reduction, and sustainable supply chains can help reduce operating expenses over time while supporting environmental goals. By lowering costs in the long run, companies can maintain profitability while being socially responsible.

Additionally, prioritizing ESG can attract investors and customers who value corporate responsibility, creating new growth opportunities. Investments in ESG can also differentiate a company in the market, offering a competitive advantage through innovation, brand loyalty, and a positive public image.

LO 3, Blooms: Comprehension, Difficulty: Moderate, TOT: 12 min., AACSB: Ethics, AICPA AC: Systems and Process Management, Section: 1.3

DQ14. Student answers will vary but will likely include Excel, SQL databases, querying, and visualization (Tableau, Power BI, etc.).

LO 4, Blooms: Comprehension, Difficulty: Easy, TOT: 15 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.4

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SOLUTIONS TO APPLICATION AND ANALYSIS QUESTIONS

A1.1. Take customer order (information event)
2. Collect payment from customer (operating event)
3. Print customer receipt (information event)
4. Bake scone for order (operating event)
5. Deliver scone to customer at counter (operating event)
6. Customer completes text message survey (information event)

LO 1, Blooms: Analysis, Difficulty: Medium, TOT: 10 min., AACSB: Analytic, AICPA AC: Systems and Process Management, Section: 1.1

A2.

Business Event/Activity	Business Process Approach	Traditional Accounting Cycle(s)
1. Ship goods to credit customer	Sales and collection	Revenue/accounts receivable
2. Pay hourly employees for the week	Acquisition and payment	Payroll
3. Sell goods for cash	Sales and collection	Revenue
4. Order a new factory machine	Acquisition and payment	N.A. Nonaccounting event
5. Receive raw materials from vendor	Acquisition and payment	Expenditures/accounts payable
6. Receive payment from credit customer	Sales and collection	Accounts receivable
7. Take out loan to pay for new factory machine	Acquisition and payment	Financing
8. Pay a dividend to shareholders	Acquisition and payment	Financing
9. Manufacture a product	Conversion	Production/cost accounting
10. Write off uncollectible account	Sales and collection	Accounts receivable
11. Issue new common stock	Acquisition and payment	Financing

LO 2, Blooms: Analysis, Difficulty: Medium, TOT: 15 min., AACSB: Analytic, AICPA AC: Systems and Process Management, Section: 1.2

A3.

Type of Quality Characteristic	Field(s) that failed	How to fix
Consistency	ID	There should be three leading 0s (ID 239)
Confirmatory value	Date	Incorrect date; you can verify that there are not 31 days in April (ID 000240)

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Understandability	Item	PBC should be spelled out as "Peanut Butter Cookies" (ID 000241)
Completeness	Customer Last Name	The last name is missing (ID 000242)

LO 3, Blooms: Analysis, Difficulty: Medium, TOT: 10 min., AACSB: Technology, AICPA AC: Reporting, Section: 1.3

A4.

Answer	Information Situation	Characteristic
1.	This characteristic is a decisive factor in reporting land and buildings at historical cost in a company's Balance Sheet, even though this value may not resemble the asset's fair market value.	F. Faithful representation
2.	In a company's income statement, sales transactions included in the revenue amount are those, and only those, that reflect revenue earned during the reporting period—no more and no less.	A. Completeness
3.	In the management decision to replace a long-haul transportation truck used for the past ten years, the inclusion of information about the original cost of the truck in a report has no _____ (fill in the characteristic).	B. Relevance
4.	Disney World provides guests with Magic Bands, which are wristbands that collect data on who the guests are, where they are, what rides they go on, and what they buy. Disney characters greet children wearing the bands by name. Magic Bands provide Disney with an incredible amount of data about guest profiles and preferences. Information like this can help Disney improve decision making for optimal management of its resorts.	C. Predictive value
5.	Alicia's Accessories is developing a proprietary big data system called Just-in-Time. The system aims to continuously monitor and improve operations, products, marketing, sales, and employee training and enhance competitive advantage. The data comes from the company's point-of-sale systems, inventory systems, promotions, customer feedback and surveys, and loyalty programs. Just-in-Time provides information every 30 minutes at headquarters for immediate decision making. Operational glitches get immediate attention.	E. Timeliness
6.	Oil and gas companies consistently apply the same industry-specific accounting standards to their financial statements, so there should be a high level of _____ (fill in the characteristic) within that industry.	H. Comparability
7.	A company with information about a probable and material lawsuit must report it in the notes to its financial statement. An attempt to	A. Completeness

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	withhold this information indicates bias and *not* _____ (fill in characteristic).	
8.	Financial statements include information on cash flows, so that financial analysts and investors can evaluate the accuracy of their past predictions.	G. Confirmatory value
9.	Financial analysts and investors use past financial statements as a basis to chart performance trends and make predictions about future performance, including profitability and cash flow, for business valuation purposes.	C. Predictive value

LO 3, Blooms: Analysis, Difficulty: Medium, TOT: 20 min., AACSB: Ethics, AICPA AC: Reporting, Section: 1.3

A5.

Business Event	**O, F, or I?**	**Related Information Event**	**Related Decision Activity**
1. Ship goods to a credit customer	O	Retrieve a report that compares the shipment date to the delivery date and shows the time taken for successful delivery.	Monitor the efficiency and effectiveness of couriers.
2. Pay hourly employees for the week	O	Retrieve the overtime report for the week.	Decide whether we are overworking employees. Decide whether to hire more employees to meet future demands.
3. Return a defective product to the supplier	O	Print a report on defective product returns for the quarter.	Identify substandard vendors.
4. Purchase a new computer	I	Print a report on unauthorized purchases.	Identify unauthorized fixed asset purchases.

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5. Receive raw materials from a vendor	O	Generate a report showing acceptance of deliveries that do not have an approved purchase order or quantities that differ from the purchase order information.	Identify unauthorized raw material purchases. Identify shipments of incorrect items and/or quantities.
6. Pay an invoice received from a vendor	O	Retrieve a report that matches goods received with goods ordered and paid for.	Check that we only pay for authorized and delivered purchases.
7. Take out a loan to pay for a new factory machine	F	Retrieve the monthly report of cash flows.	Check that we have enough cash on hand to meet our obligations.
8. Pay a dividend to shareholders	F	Report of shareholders and their shareholding at the date of record check numbers and amounts.	Check that dividend payments are correct.
9. Manufacture a product	O	Report on the number of units and cost per unit produced this month compared to the previous month and the same month last year.	Monitor the efficiency and effectiveness of the production process.
10. Write off an uncollectible account	O	Generate accounts receivable age analysis.	Monitor the effectiveness of the collection of accounts receivable.

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11. Issue new common stock	F	Generate a report of the number of shares sold and descriptive statistics about the issue.	Decide whether we met projections for cash inflow from stock issue.

LO 1-4, Blooms: Application, Difficulty: Medium, TOT: 30 min., AACSB: Analytic, AICPA AC: Systems and Process Management, Section: 1.1-4

A6. 1.

- Receive shipment of raw materials from vendor
- Pay vendor for raw materials

2.

1. Request raw materials
2. Authorize purchase of raw materials
3. Order raw materials from vendor
4. Receive shipment of acceptable raw materials from vendor—accounting transaction
5. Pay vendor for raw materials—accounting transaction

The accounting transactions are the same!

3.

- Monitor raw material quality by vendor
- Monitor vendor complaints (could indicate fraud)
- Monitor aging of outstanding vendor orders
- Monitor late payments to vendors

LO 1-4, Blooms: Application, Difficulty: Medium, TOT: 20 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.1-4

A7.

Business Event	**Business Process**
1. Buy an espresso machine	A. Acquisitions and payments processes
2. Transfer the receipts from today from your mobile payment app to your pop-up's bank account	C. Marketing, sales, and collections processes
3. Sell your first latte	C. Marketing, sales, and collections processes

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4. Pay your friends who worked as baristas at the end of the week	A. Acquisitions and payments processes
5. Pay for pour-over coffee filters	A. Acquisitions and payments processes
6. Pay a fair-trade coffee provider for beans they delivered last week	A. Acquisitions and payments processes
7. Prepare batches of cold brew to steep overnight the night before it is sold	B. Conversion processes
8. Order a custom chalkboard sign from an Etsy shop for your daily menus	A. Acquisitions and payments processes
9. Make a macchiato for a customer	B. Conversion processes
10. Order milk from a local dairy farm's stall at a farmer's market that will be delivered next Tuesday	A. Acquisitions and payments processes
11. Bake scones to sell the next day	B. Conversion processes
12. Send your customer an e-receipt via text message	C. Marketing, sales, and collections processes

LO 4, Blooms: Application, Difficulty: Medium, TOT: 10 min., AACSB: Analytic, AICPA AC: Systems and Process Management, Section: 1.4

A8. Student answers will vary. Here are a few ways each piece of information can demonstrate the successes and failures of the pop-up:

1. Total number of coffees sold (including all types)	Can be used to forecast the need for ingredients, paper products (cups, napkins, etc.), as well as times for the coffee shop to be opened – should they be opened at 6 a.m., or do customers usually come in later in the day? Is there a time of day that more cups are sold (i.e., more customers) and times of the day where there are no sales? This might determine if you just need one barista during certain times of the day, and three at different hours to balance out the demand for their work based on the time of the day that the coffee is sold.
2. Total amount earned (before depreciation)	Can be used with 3 and 5 to determine profits. PROFIT would be $6,334.00.
3. Cost of all ingredients and supplies purchased	You need to sell at least 606 cups of coffee to break even on the ingredient cost. If divided by 30 days of operation, you would need to sell an average of 21 cups of coffee a day.
4. Cost of initial fixed assets (like espresso machine)	Using 2, 3, 4, and 5 to determine recovery on initial investment. Pop-up already earned enough to cover

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	equipment purchase – it is out of the red after one semester.
5. Cost of paying baristas	You have employed two students who were making $12 per hour (job creation). You can use wages paid to baristas to determine net profit.
6. Average wait time (length of line)	Long waits mean the pop-up was popular. Use this information to see if you need to employ more baristas to cut the wait time and potentially increase the flow of customers if they don't see a long line.
7. Total number of students who had finals during this time	Can be used with 8 to see what percentage of students were customers. This could also help with marketing materials – should you do more student-friendly deals to bring more students into the store?
8. Total number of customers	Can be used with 7 to see what percentage of students were customers. Create a "loyalty program" to track your return customers to see if you are bringing in new business or returned business and how to attract new business while keeping the current clientele happy and coming back.

LO 3-4, Blooms: Application, Difficulty: Medium, TOT: 20 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.3-4

A9. (1) You will need the following information to make the inventory decision:

- Transaction information for each of the stores, divided by the store location.
- The transaction information needs to include the type of popsicle that was purchased.
- Your past inventory order for that store.

(2) How to use the information:

- Use the current sales to estimate which flavors are most popular for that location.
- Prepare a forecast by the usage of the sales information to predict the future purchases by those customers.
- Utilize the past inventory order to see what has been ordered in the past and what has been used from that inventory.
- If there are items that were purchased last month, that were not used in this month's sales (per the sale transaction file), and are nonperishable, they should not be ordered this month.
- If the location ran out of a certain popsicle flavor, check last month's order and increase the raw materials purchased for this month.

LO 1-4, Blooms: Application, Difficulty: Medium, TOT: 10 min., AACSB: Technology, AICPA AC: Systems and Process Management, Section: 1.1-4

A10.

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List A	List B	Answer
A. The practice of accounting	1. Input into an information system	10
B. Sales and collection processes	2. No connection to business events	8
C. Conversion processes	3. Profits not declared or paid as dividends	11
D. Data	4. Order raw materials from vendor	1
E. Acquisition and payments processes	5. Inputs of resources into a business	4 and 5
F. Output	6. Information or Product	6
G. Cost versus benefit	7. Timeliness and verifiability	13
H. Misperception(s) about accounting	8. Acquire and retain customers	2 and 12
I. Enhancing characteristics of information quality	9. Business event	7
J. Information quality	10. Serves the public interest and promotes prosperity	7
K. Take customer order	11. Combine resources to add value	9
L. Retained earnings	12. Rigid black-or-white rules; no flexibility in accounting choices	3
	13. There is no match for this item	

LO 1-4, Blooms: Application, Difficulty: Medium, TOT: 10 min., AACSB: Analytic, AICPA AC: Systems and Process Management, Section: 1.1-4

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CHAPTER 1

DATA AND ANALYTICS IN THE ACCOUNTING PROFESSION

Learning Objectives:

LO 1.1: Summarize how advances in data and technology are impacting accounting professionals.

LO 1.2: Describe the stages of the data analysis process.

LO 1.3: Identify the skills necessary to perform data analysis.

LO 1.4: Explain how to apply a data analytics mindset during the data analysis process.

ANSWERS TO MULTIPLE CHOICE QUESTIONS

1. A
   LO 1.1, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
2. C
   LO 1.1, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
3. C
   LO 1.2, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
4. B
   LO 1 2, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
5. B
   LO 1.2, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
6. C
   LO 1.2, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
7. D
   LO 1.2, BT: C, Difficulty: Medium, TOT: 3 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
8. C
   LO 1.2, BT: C, Difficulty: Medium, TOT: 3 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
9. A
   LO 1.3, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
10. D
    LO 1.3, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
11. B
    LO 1.3, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
12. A
    LO 1.4, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
13. D
    LO 1.4, BT: K, Difficulty: Easy, TOT: 2 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
14. A
    LO 1.4, BT: C, Difficulty: Medium, TOT: 3 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies
15. B
    LO 1.4, BT: C, Difficulty: Medium, TOT: 3 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

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ANSWERS TO REVIEW QUESTIONS

1. Both the CPA exam and the CMA exam have added data analytic content to their exams. This is in response to what new professionals need to know as they enter the accounting profession. The CPA Exam Evolution is a strong indication of how the accounting profession is changing. The new CPA exam will have more technology and data analytics questions in the Core exam, as well as the Discipline exams.

LO 1.1, BT: K, Difficulty: Easy, TOT: 6 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

2.

Changes	**Accounting Practice Area**
1. Ability to use entire data sets to identify exceptions, anomalies, and outliers	**ANS:** a. Auditing, c. Managerial accounting
2. Automation of manual processes	**ANS:** a., b., c., d. (All areas)
3. Automation of journal entries	**ANS:** b. Financial accounting
4. Risk identification	**ANS:**. a. Auditing, c. Managerial accounting
5. Forecasting	**ANS:** b. Financial accounting, c. Managerial accounting
6. Compliance reporting	**ANS:** d. Tax accounting

LO 1.1, BT: C, Difficulty: Medium, TOT: 8 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

3. Data are raw facts and figures. Technology helps covert that data into information. Information is the knowledge gained from analyzing the data.

LO 1.1, BT: C, Difficulty: Medium, TOT: 6 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

4.

Purpose	**Method**
1. Understanding what is happening currently and what has happened in the past.	**ANS:** a. Descriptive
2. Understanding what should happen to meet our goals and objectives.	**ANS:** d. Prescriptive
3. Understanding what might happen in the future.	**ANS:** c. Prescriptive
4. Understanding why something happened.	**ANS:** b. Diagnostic

LO 1.2, BT: C, Difficulty: Medium, TOT: 6 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

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5. The first step is to identify the motivation for the analysis. The motivation for a project is the why the analysis is being performed. It is important to understand the reason for the analysis before beginning the analysis.

The second step is to set an objective. In other words, "What is the goal of the analysis?" This step will help articulate the goal and specific questions that will be analyzed.

The third step is to develop a strategy. In this step, we determine the data and analysis methods necessary to achieve the project's goal.

LO 1.2, BT: K, Difficulty: Easy, TOT: 8 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

6. Extracting is the process in which data is retrieved from a source. This could involve downloading an Excel file or extracting data from a database or a data warehouse.

Transforming the data occurs when data is cleaned, restructured, and/or integrated prior to using it for analysis.

Loading data is the process of importing transformed data into the software used to perform analyses.

LO 1.2, BT: K, Difficulty: Easy, TOT: 8 min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

7.

Example	**Data Analysis Process Stage**
1. Develop a model to calculate contribution margin.	**ANS:** b. Analyze
2. Get data from a database.	**ANS:** b. Analyze
3. Upload data into analysis software.	**ANS:**b. Analyze
4. Determine the objective of the analysis.	**ANS:** a. Plan
5. Create a forecast of net income.	**ANS:** b. Analyze
6. Identify the data needed for analysis.	**ANS:** a. Plan
7. Identify relationships within the data.	**ANS:** b. Analyze
8. Create a visualization to show the results of the analyses.	**ANS:** c. Report
9. Identify sales patterns.	**ANS:** b. Analyze

LO 1.2, BT: C, Difficulty: Medium, TOT: 12 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

8. A data analytics mindset is the habit critically thinking through the planning, analysis, and interpretation of data results before making and communicating a professional choice or decision. Individuals with a data analytics mindset are inquisitive. They always ask "why" when interpreting results, are open to learning new technologies, and take the time to evaluate their own thinking.

LO 1.3, BT: C, Difficulty: Medium, TOT: 6min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

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9. The ability to communicate well is important in all areas of accounting. In data analytics it is important to have good communication skills to explain the results of analyses so others can understand and act if needed.

LO 1.3, BT: C, Difficulty: Medium, TOT: 6min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

10.

Definition	**Skill**
1. Willingness to try new technology.	**ANS:** c. Technological agility
2. The ability to read, write, and communicate data in context.	**ANS:** b. Data literacy
3. Ability to create effective data visualizations	**ANS:** d. Communication
4. Disciplined reasoning used to investigate, understand, and evaluate an event, opportunity, or an issue.	**ANS:** a. Critical thinking

LO1. 3, BT: K, Difficulty: Easy, TOT: 8min, AACSB: Knowledge, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies.

11.

- Stakeholders: Understand the internal and external parties impacted by the data analysis results.
- Purpose: Determine the reason for the analysis.
- Alternatives: Evaluate and rank all potential data and analysis choices during the data analysis process.
- Risks: Consider risks to the data and the analysis choices, including assumptions and potential biases.
- Knowledge: Identify and acquiring the knowledge necessary to properly prepare and interpret the analyses.
- Self-reflection: Review decisions and processes for lessons learned and apply them to future projects.

LO 1. 4, BT: C, Difficulty: Medium, TOT: 10min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

12. Student answers will vary. General examples follow.

- Motivation: All elements of critical thinking can be applied. For example, it is important to identify the stakeholders so that their motivations are understood. Understanding those motivations allows a better understanding of why the analysis is being performed.
- Objective: All elements of critical thinking can be applied. For example, staying focused on the purpose of the analysis will make identifying relevant questions easier.
- Strategy: All elements of critical thinking can be applied. For example, consider alternatives for data analysis and then choose the best data analysis method.

LO 1.4, BT: AP, Difficulty: Hard, TOT: 16 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

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13. Student answers will vary. General examples follow.

- Prepare data: All elements of critical thinking can be applied. For example, be aware of risks when preparing data. Risks include incomplete or inaccurate data. Incomplete or inaccurate data will result in incorrect analyses.
- Build information models: All elements of critical thinking can be applied. For example, it may be necessary to consider alternative models and/or alternative data for our models. By considering alternatives, we can feel more confident that we have chosen the best model.
- Explore data: All elements of critical thinking can be applied. For example, maintaining focus on the project's purpose will help avoid wasting time exploring the data for irrelevant questions. Staying focused on the purpose of the analysis makes us more efficient.

LO 1.4, BT: AP, Difficulty: Hard, TOT: 14 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

14. Student answers will vary. General examples follow.

- Interpret results: All elements of critical thinking can be applied. For example, it is necessary to identify the knowledge that is needed to understand the analysis before we interpret it. When that knowledge is identified, we are better prepared to interpret the analysis results.
- Communicate results: All elements of critical thinking can be applied. For example, when preparing to communicate results, it helps to consider the stakeholders who will receive the communication. Understanding the stakeholders let's us better identifythe audience and structure the presentation of results based on the information they need to know.

LO 1.4, BT: AP, Difficulty: Hard, TOT: 14 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

SOLUTIONS TO BRIEF EXERCISES

BE 1.1

1. This analysis can be used to identify sales patterns and to help detect unusual sales. If unusual patterns or sales are identified, the auditor can do further testing.

2. The months of August – November look low compared to prior months. December looks high. It would also be helpful to compare this pattern to the prior year to identify any similarities.

LO 1.1, BT: AN, Difficulty: Easy, TOT: 8 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies, H2: Analytics and Accounting Professional Practice

BE 1.2

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1. Total Sales = $2,760,509,187.74

Total Costs = $1,964,399,918.41

Total Profit = $796,109,269.33

2. The data has information from 2022 to 2025. A financial dashboard can include tabs for each of the years, quarters, and months that will allow the user to select the period they are most interested in. The data can be displayed on the dashboard for each of the measures.

3. A visualization showing revenue and expenses can be added. Also, a table with the financial information summary can be added. Data related to assets and liabilities would be useful as well. Finally, a comparison of prior year to current year profit in a visualization would be useful.

LO 1.1, BT: AN, Difficulty: Medium, TOT: 8 min, AACSB: Data Analytics, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.3

1. Descriptive

2. Diagnostic

3. Predictive

4. Descriptive

LO 1.2, BT: AP, Difficulty: Easy, TOT: 3 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.4 Student answers will vary.

1. Financial data: Forecasted sales of scooters in Canada. Estimated costs for the expansion. Sales and expenses for the U.S. operations to be used to estimate expense for the Canada expansion.

Non-financial data: Competitor market share. Population of major cities where scooters are used. Weather data. Foreign exchange rates.

2. The financial data listed is internal data. The non-financial data is external.

LO 1.2, BT: C, Difficulty: Medium, TOT: 5 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.5

1. The analysis is being performed to investigate profit margin by customer.

2. The goal is to identify if there are any customers that are below the target profit margin.

3. Perform an analysis that shows profit margin by customer and highlight the customers that are below 42% profit margin.

LO 1 2, BT: AP, Difficulty: Medium, TOT: 5 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

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BE 1.6

1. It would be easier to see if the products were grouped, and then each bar was a different year. That way it would be easier to identify if a product is increasing or decreasing. However, we can still see that in this visual, just not as easily. Blueberry scones seems to have decreased from 2022 to 2023, and then increased in 2024 and decreased in 2025. All products decreased from 2022 to 2023. All products except cinnamon buns increased in 2024. In 2025, poppyseed bagels increased the most.

2. The interpretation can be communicated orally, in writing, or visually. To communicate visually, create a visual with groupings by product as discussed in answer 1.

LO 1.2, BT: AP, Difficulty: Medium, TOT: 5 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.7 Guide students to the websites for accounting firms or job posting websites such as Indeed.com or Robert Half Accounting. Student answers will vary.

Qualifications:

- Expert knowledge of general financial accounting and cost accounting.
- Understanding of and ability to adhere to generally accepted accounting principles.
- Proficient with accounting software.
- Excellent organizational skills and attention to detail.
- Excellent written and verbal communication skills.
- Proficient in Microsoft Office Suite or similar software.
- Bachelor's degree in accounting.

Responsibilities:

- The accountant/auditor will inspect and review, but may also prepare and report, financial transactions and budgetary controls for assigned funds and departments.
- Examines assigned financial records and statements for accuracy.
- Analyzes financial data, making recommendations as appropriate to improve accuracy, efficiency, and to reduce costs.
- Inspects the budget and general ledger for assigned departments and accounts, ensuring that funds are available, and expenditures are assigned correctly.
- Reviews and/or assists with preparation of financial statements and records provided to federal, state, and internal auditors and similar personnel.
- As needed, assists with accounting duties for and corrections to listed financial records.
- As appropriate, identifies and recommends updates to accounting systems and procedures.

LO 3, BT: S, Difficulty: Medium, TOT: 10 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.8

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Guide students to the websites for accounting firms or job posting websites such as Accounting Jobs Today.com, Indeed.com, or Robert Half Accounting. Student answers will vary.

Qualifications:

- Ideal applicants will have proficient knowledge of accounting and tax principles.
- Bachelors or master's degree in accounting.
- CPA license, eligibility to sit for the CPA exam or working toward obtaining license.
- Strong organizational, communication and interpersonal skills.
- Customer service skills.
- Ability to work independently.
- Ability to analyze complex matters.
- Enthusiasm for work and eagerness to learn.

Responsibilities:

- Preparation of income tax returns for individual, business, and fiduciary clients.
- Consulting engagements.
- Direct correspondence with clients.
- Direct correspondence with federal and state authorities.
- Work effectively with team members.

LO 1.3, BT: S, Difficulty: Medium, TOT: 10 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.9 Guide students to the websites for accounting firms or job posting websites such as Accounting Jobs Today.com, Indeed.com, or Robert Half Accounting. Student answers will vary.

Qualifications:

- Strong and analytical ability; accuracy with numbers; and extreme attention to detail.
- Excellent computer skills using excel and Google suite.
- Experience with basic accounting software.
- Strong oral and written English communication skills.
- Communication skills must be effective and courteous requiring high integrity when dealing with restricted and/or highly confidential information.
- Ability to establish effective working relationships with employees at all levels of the organization.
- Ability to work diplomatically with others to discuss and resolve transactional issues as well as discussion of policies and workflow.
- Experience with Great Plains accounting software.

Responsibilities:

- Support assigned accounts payable functions that include following procurement policy through payment of invoices.

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- Ensure timely payment of all OEF's payees, working closely with program staff and vendors to develop most efficient and cost-effective means of payment.
- Ensure accuracy and completeness of supporting documentation, as well as help to ensure compliance and consistency with stated policies and procedures.
- Supports the purchasing accounts payable system train and support program staff incorrectly using OEF's financial tools, processes, and policies to ensure compliance and efficiency.
- Responsible for credit card management and reconciliation process. Review transactions for appropriate coding, documentation, and approval.

LO 1.3, BT: S, Difficulty: Medium, TOT: 10 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.10

1. I
2. E
3. I
4. E
5. E
6. E
7. E
8. E

LO 1.4, BT: C, Difficulty: Easy, TOT: 5 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

BE 1.11

Critical Thinking Element	Definition
1. Stakeholders	**ANS:** d. The parties potentially impacted by the results.
2. Purpose	**ANS:** a. The reason for the analysis.
3. Alternatives	**ANS:** c. Different options that are considered and ranked.
4. Risks	**ANS:** f. Obstacles and challenges to our thinking or analyses.
5. Knowledge	**ANS:** e. The concepts that add meaning to the data.
6. Self-reflection	**ANS:** b. A review of what worked and what did not.

LO 1.4, BT: C, Difficulty: Easy, TOT: 5min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

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SOLUTIONS TO EXERCISES

EX 1.1 Student answers will vary.

1. Customers (most of which would be students, alumni, and community members), owners or Investors of the bookstore (assume the managers are not the owners), sales tax authorities

2.

- Which products have the highest contribution margin each month?
- How do sales of these products behave each month?
- Which products have the largest sales volume?
- Which products have the highest sales price?
- Which products are typically sold together (for product bundling opportunities)
- Which product sales respond to which types of advertising?
- Could sales revenues increase with online sales options from the store website?

3. Data alternatives might include number of units sold per product, product location in store, price, and cost of each product. Analysis alternatives might include:

- Analyze monthly sales by product. This shows if there may be different top three products sold each month.
- Analyze contribution margin rather than sales revenues. If the goal is to determine profit maximization, contribution margin would be a better analysis than sales revenue because it identifies profit.

4. Data risks include incomplete and incorrect data for each of the analysis alternatives listed. Analysis risks include:

- For monthly sales by product: Incorrectly writing information model formulas for total sales.
- For contribution margin analysis: Incorrectly calculating contribution margin and not considering avoidable fixed costs.

5.

- Sales revenues by product by month
- Contribution margin by product by month
- Contribution Margin per unit
- Contribution margin ratio per product or overall Contribution margin ratio
- Net income by product, by month

6.

- Asking which products might work to sell as bundles.
- Asking which of these products might be adapted to have seasonal appeal (Pumpkin, etc.); Slicing results by month may have revealed different results.
- Considering that contribution margin results could be very different than sales revenues.

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LO 1.2, 1.4, BT: AN, Difficulty: Medium, TOT: 15 min, AACSB: Analytic, AICPA FC: Leverage Technology to Develop and Enhance Functional Competencies

EX 1.2. Student answers will vary.

1. Investors, federal and state tax authorities.

2.

- Was a complete listing of all payroll commission payouts received?
- Are there certain employees who received the largest payroll commission payouts each month?
- Are there any patterns in the data regarding the dollar amount of commission paid each month?
- Do the commissions match the sales records by sales employees?

3. Data risks include incomplete and incorrect data. Analysis risks include sample risks (if samples are used). risk level assumptions, and errors made in analysis, such as during reconciliations.

4. Before beginning the analysis, reflect on the importance of testing the data set for cleanliness and completeness before performing more tests. After completing the analysis, reflect on what worked well and what was challenging. This will help guide future analyses of payroll.

LO 1. 2, 1.4, BT: AN, Difficulty: Medium, TOT: 15 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

EX 1.3 Student answers will vary.

Stage	Data Analysis Process	Response
Plan	1. What is the motivation for performing the analysis"	**ANS:** Correctly valuing inventory on the balance sheet and cost of goods sold on the income statement.
	2. What is the objective of your data analysis project?	**ANS:** To identify obsolete inventory by identifying when the last time each inventory item was sold, and which inventory items have sold less than the mean sold last year.
	3. What is your strategy to achieve the objective?	**ANS:** Extract inventory table fields and join with sales invoice tables. Rank inventory sales (volume) from lowest to highest by product.
Analyze	4. What would you consider in the data set before you being your analysis?	**ANS:** Preview data fields to see if they are compatible for joining. Check for missing data or unusual data.
	5. What information model might you use to satisfy the objective?	**ANS:** Sum quantity sold for each inventory item. Multiply by price to get $ Sales for each inventory item. Rank lowest to highest. Draw a line where the inventory items will be considered

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		obsolete and calculate value using unit cost.
	6. Assume your analysis identified several items in inventory that have not sold over the last year. How would explore initial results?	**ANS:** Drill down through initial results by slicing by month to see if there is more intelligence from understanding seasonality of inventory item sales.
Report	7. Assume your analysis results in a calculation of inventory obsolescence as of year-end. What you consider as you interpret these results?	**ANS:** Determine if the obsolete items were correctly categorized and if the same trend is being observed by your competitors for risk of product substitutes.
	8. How would you communicate your results to the CFO?	**ANS:** Create visualizations that illustrate the lack of sales for these inventory items. Create a summary of how the value was determined for the inventory reserve, citing all assumptions used. Display the ranking of obsolete inventory.

LO 1.2,1.4, BT: AN, Difficulty: Hard, TOT: 10 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

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EX 1.4 Student answers will vary.

Stage	Data Analysis Process	Critical Thinking Elements
Plan	1. Motivation	**ANS**: • Stakeholders: IT department, investors • Risk: Terminated employees logging in with other employee's credentials.
	2. Objective	**ANS**: • Purpose: To find unauthorized access opportunities. • Alternatives: To match employee IDs with log-ins or match log-ins with employee IDs.
	3. Strategy	**ANS**: • Alternatives: Selecting from different data from HR and log-in files • Risks: Are HR files up to date with regards to currently authorized IDs?
Analyze	4. Prepare data	**ANS**: • Purpose: The data selected needs to be relevant for the purpose. • Risks: The data may be incomplete or incorrect.
	5. Build models	**ANS**: • Knowledge: What log-ins are most important to capture? • Alternatives: Log into system, emails, use of software, or data files
	6. Explore data	**ANS**: • Alternatives: When unauthorized employee IDs are found, search to see which applications they used while they were logged in. • Risks: There may be a trojan horse (code that is triggered by access) that could destroy data or processing.
Report	7. Interpret	**ANS**: • Stakeholders: Does the unauthorized access put anyone at risk? • Self-Reflection: What other areas of the AIS might need to be reviewed?
	8. Communicate	**ANS**: • Stakeholders: How are they impacted by the findings? • Purpose: Did the findings relate to the original objective and questions?

LO 1.2,1.4, BT: AP, Difficulty: Hard, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

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EX 1.5 Student answers will vary.

Stage	Data Analysis Process	Critical Thinking Elements
Plan	1. Motivation	**ANS**: • Stakeholders**:** Management, investors, creditors, credit customers • Purpose: Determine the net realizable value of accounts receivable.
	2. Objective	**ANS**: • Purpose: To understand if the estimations of bad debts are reasonably calculated. • Knowledge: The GAAP rules for how to estimate bad debts.
	3. Strategy	**ANS**: • Alternatives: Accounts receivable data, estimation adjustments, and write offs. • Risks: Missing changes in credit customers' ability to pay obligations.
Analyze	4. Prepare data	**ANS**: • Knowledge: History with each credit customer, credit policies, and past estimates for bad debts. • Risks: incorrect data, missing data,
	5. Build models	**ANS**: • Knowledge: GAAP rules for estimating bad debts. • Self-reflection: Were the proper aging categories selected? Are they consistent with the industry?
	6. Explore data	**ANS**: Alternatives**:** Calculate A/R turnover and days outstanding by customer. • Purpose: Stay focused on where the bad debts might be the highest risk.
Report	I7. Interpret	**ANS**: • Stakeholders: management, investors, creditors, credit customers • Purpose: To determine if the findings answer the objective questions.
	8. Communicate	**ANS**: • Stakeholders**:** management, investors, creditors, credit customers • Self-reflection**:** Is the net realizable value of accounts receivable free of material error? Would this analysis help me perform this task again for another client?

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LO 2, 4, BT: AP, Difficulty: Hard, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

EX 1.6 Student answers will vary.

Stage	**Data Analysis Process**	**Critical Thinking Elements**
Plan	1. Motivation	**ANS**: • Stakeholders: Investors, creditors, regulators • Purpose: To determine the bankruptcy risk.
	2. Objective	**ANS**: Purpose: To determine the solvency risk levels. • Knowledge: How the cash flows work in the airline industry.
	3. Strategy	**ANS**: • Alternatives: Choice of ratio to analyze. • Risks: Incorrect data in numerators and denominators, missing off balance sheet financing.
Analyze	4. Prepare data	**ANS**: • Risks: Dirty data, incomplete data, and discounting outliers. • Knowledge: Which debts have more uncertainty or higher prioritization.
	5. Build models	**ANS**: • Knowledge: Financial statement analysis, xBRL data • Purpose: To build trends and industry comparisons on selected ratio over five years.
	6. Explore data	• Knowledge: When a significant change in ratio has occurred, read the narratives in the annual report and other news releases for explanation. • Self-reflection: Is the change in solvency a temporary change or a longer run change?
Report	7. Interpret	**ANS**: • Stakeholders: Investors, creditors, regulators • Self-reflection: What caused the decline in solvency? How can we advise other airlines or other industries how to preserve their solvency?
	8. Communicate	**ANS**: • Stakeholders: Investors, creditors, regulators • Purpose: To inform the stakeholders how serious the solvency findings are and how long the companies may be able to go before having to take drastic cash flow measures.

LO 1.2,1.4, BT: AP, Difficulty: Hard, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

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EX 1.7 Student answers will vary.

Stage	Data Analysis Process	Brief Description	Critical Thinking
Plan	1. Motivation	**ANS:** To understand what is not working in the business model or the business operations.	**ANS:** Stakeholders Purpose
	2. Objectives	**ANS:** To find the cause for the phenomena of decreasing sales with increasing net income.	**ANS:** Purpose Risks
	3. Strategy	**ANS:** The data needs to include prices, variable costs per unit and volume sold.	**ANS:** Alternatives Risks
Analyze	4. Prepare data	**ANS:** Test data for integrity and missing values and any data fields that need to be transformed to be analyzable.	**ANS:** Purpose Knowledge
	5. Build models	**ANS:** Calculate contribution margin per unit, or contribution margin ratio for each product type.	**ANS:** Knowledge Self-reflection
	6. Explore data	**ANS:** Test if the phenomena is occurring because contribution margin per unit or the number sold is the cause of the changing sales mix.	**ANS:** Purpose Alternatives
Report	7. Interpret	**ANS:** Ask if there could be another explanation for the results, such as a change in allocated indirect fixed costs.	**ANS:** Purpose Risks
	8. Communicate	**ANS:** Prepare a visualization explaining how the sales mix has changed towards products that have higher contribution margin per unit and suggest some future strategies for sales revenues and net income.	**ANS:** Stakeholders Knowledge

LO 1.2, 1.4, BT: AP, Difficulty: Hard, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

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EX 1.8 Student answers will vary.

Stage	Data Analysis Process	Brief Description	Critical Thinking Elements
Plan	1. Motivation	**ANS:** To investigate the anticipated tax rate changes on the government revenues and to taxpayers filing as single.	**ANS:** Stakeholders Purpose
	2. Objective	**ANS:** Determine if the tax changes will increase tax revenues for the government (and therefore increase the tax burden on the citizens).	**ANS:** Purpose Risks
	3. Strategy	**ANS:** Gather the demographics of the citizens in each category of tax rates. Calculate the mean income in each category. Multiply the mean by the new tax rates and compare to the product of the mean by the old tax rates to calculate the difference.	**ANS:** Knowledge Risks
Analyze	4. Prepare data	**ANS:** Collect the related census data, clean dirty data and incomplete data.	**ANS:** Alternatives Risks
	5. Build models	**ANS:** Group data into the tax bracket categories. Calculate the mean. Multiply mean by new tax rates. Sum the three categories.	**ANS:** Knowledge Alternatives
	6. Explore data	**ANS:** In the groups where an increase or decrease is the findings, break the category or categories into interval ranges and repeat the analysis on range means.	**ANS:** Purpose Knowledge
Report	7. Interpret	**ANS:** Review and verify all data and analysis steps and review the findings with respect to the purposeful objective.	**ANS:** Purpose Knowledge
	8. Communicate	**ANS:** Prioritize a stakeholder audience and provide visualizations and a summary of findings which explains the impacts of the new tax	**ANS:** Stakeholders Purpose Self-reflection

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		rates on both the government and the single tax filing status.	

LO 1.2,1. 4, BT: AP, Difficulty: Hard, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

SOLUTIONS TO PROFESSIONAL APPLICATION CASE

PAC 1.1 Auditing:

1. Auditors could examine the data to see if there are any exceptions, anomalies, or outliers in the receipt transactions. Any of these occurrences could indicate a higher risk of material misstatement.

2. Auditors perform substantive analytical procedures to provide evidence to support the assertion that the financial records of an entity are complete, valid, and accurate. Auditors could use the receipt transactions data test the totals of receipts to see if it agrees to the trial balance.

LO 1.1,1.2,1.3,1.4, BT: AP, Difficulty: Medium, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking,

PAC 1.2 Financial Accounting:
1. Financial accountants can use SSBI tools to perform analytics and create financial dashboards to support decision-making. Little Tots could use SSBI software to create dashboards that can track financial information such as total revenue, total expenses, and cashflow.

2. Answers may vary. Little Tots should consider creating a financial dashboard that tracks revenue and expenses. They can also track receipts so that they can monitor cashflows. They may also track assets, liabilities, and gross profit.

3. Answers will vary but should include data related to financial performance.

LO 1,2,3,4, BT: AP, Difficulty: Medium, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

PAC 1.3 Managerial Accounting:
1. Little Tots should consider the cities with the highest population of children five and under and with the highest median income. Little Tots can use this information to choose the cities that would have the highest potential income.

2. Answers will vary, but students should identify the sales forecast, break-even analysis, and income statement.

3. A budget is a predictive analytic method.

LO 1,2,3,4, BT: AP, Difficulty: Medium, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

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PAC 1.4 Tax Accounting:

Data Available	**Number of Returns (ANS)**	**Dollar Amount (ANS)**	**Reason (ANS)**
Zip Code	X		Zzip codes are necessary to be able to compare cities
Size of Adjusted gross income:			
$1 under $25,000	N/A		
$25,000 under $50,000	X	X	Both measures can be used to determine the total amount of income and the number of people in this income range.
$50,000 under $75,000		X	Both measures can be used to determine the total amount of income and the number of people in this income range.
$75,000 under $100,000	X	X	Both measures can be used to determine the total amount of income and the number of people in this income range
$100,000 under $200,000	X	X	Both measures can be used to to determine the total amount of income and the number of people in this income range.
$200,000 or more	X	X	Both measures can be used to determine the total amount of income and the number of

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			people in this income range.
Number of Single Returns	X		These numbers give us an idea of the population.
Number of Joint Returns	X		These numbers give us an idea of the population.
Number of Head of Household Returns	X		These numbers are an indication of how many single parents there may be.
Total Income	N/A		
Salaries and Wages in AGI	X	X	These amounts help to determine wealthier areas
Taxable Interest	N/A		
State and Local Income Tax Refunds	N/A		
Business or Professional Net Income	N/A		
Unemployment Compensation	N/A		
Student Loan Interest	N/A		
Total Standard Deduction	N/A		
Total itemized Deduction	N/A		
State and Local Taxes	N/A		
Total Taxes Paid	N/A		
Income before tax credits	N/A		
Earned income credit	N/A		
Additional child tax credit	X	X	These measures are an indication of how many children might be in the area.

LO 1,2,3,4, BT: AP, Difficulty: Medium, TOT: 20 min., AACSB: Analytic, AICPA BB: Strategic/Critical Thinking

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Alternative Power BI Solution for BE 1.2

Question 1

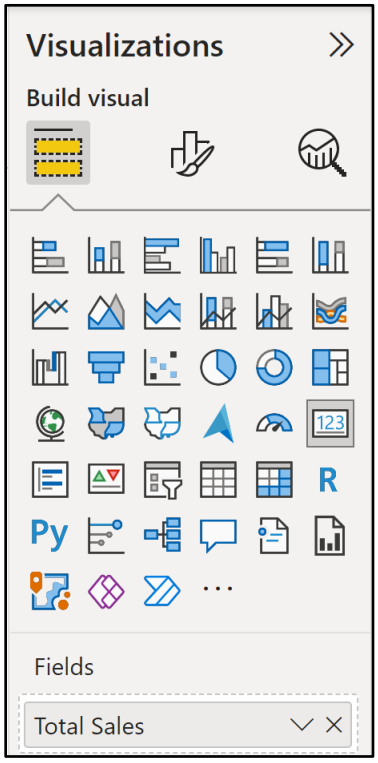
Step 1: Create a new Power BI file, name it (e.g., OnsStopShop), and extract the data.

- Transfer the data from the Excel file to Power BI. Click **Get data** in the **Data** group in Power BI's home ribbon. (Note: you can also click on **Excel workbook** in the **Data** group and skip a step).
- Select **Excel** and click the **Connect** button.
- Click on **Load** to extract the data.

Note: We created a Power BI file with the data set: "DA_CH 01_EOC BE 1.2-One Stop Shop-Power BI". You can use this file instead and skip the extraction part of the exercise.

Step 2: Complete the three calculations.

Create a card visualization with the following structure:



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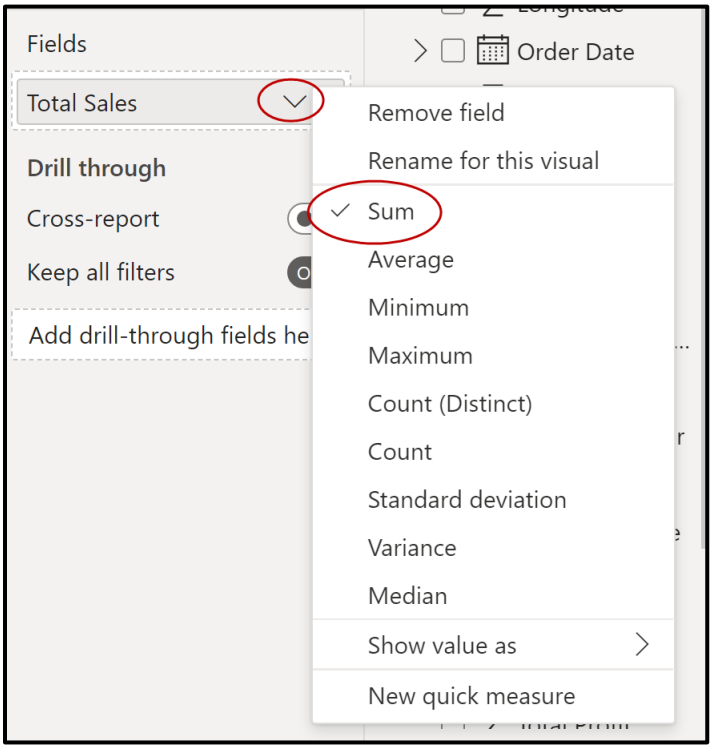
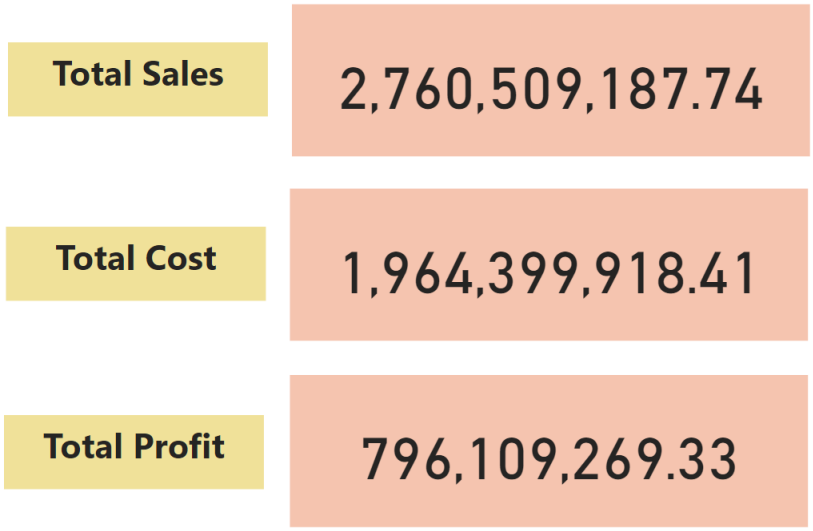
Power BI automatically sums all values in the “Total Sales” column:



Create similar cards for the “Total Cost” and “Total Profit” fields.

The resulting report looks as follows:



Question 2

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The data has information from 2022 to 2025. A financial dashboard can include tabs for each of the years, quarters, and months that will allow the user to select the period they are most interested in. The data can be displayed on the dashboard for each of the measures.

Question 3

A visualization showing revenue and expenses can be added. Also, a table with the financial information summary can be added. Data related to assets and liabilities would be useful as well. Finally, a comparison of prior year to current year profit in a visualization would be useful.

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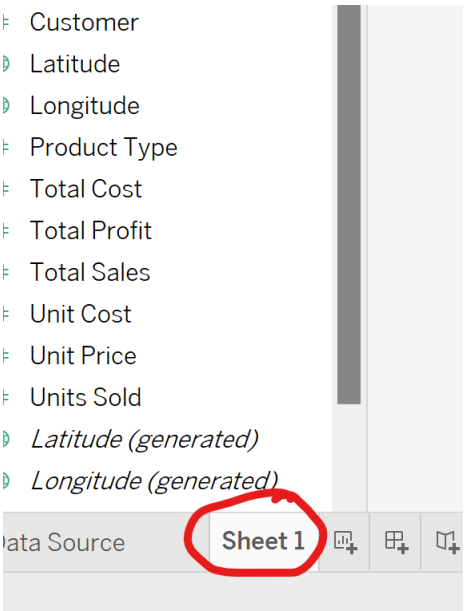
Tableau Solution Manual

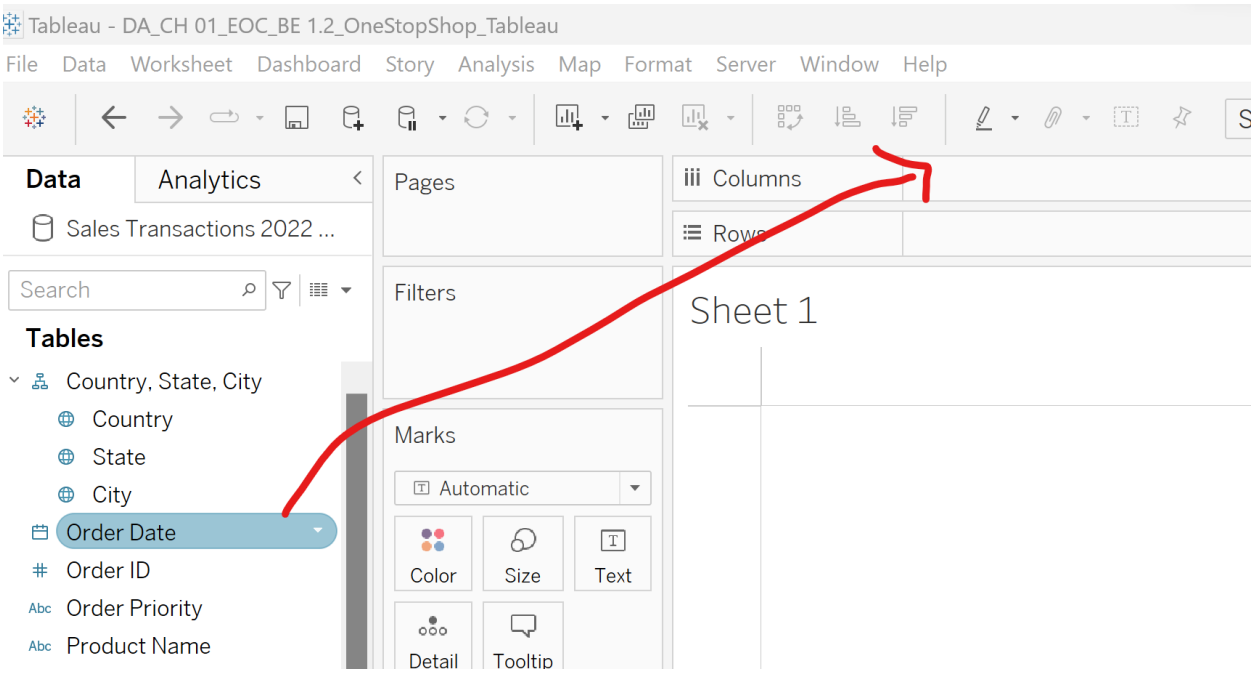
Chapter 1

BE 1.2:

1. Open the Tableau Packaged Workbook: DA_CH 01_EOC_BE 1.2_OneStopShop_Tableau
2. Click on Sheet 1:



3. Drag Order Date to Columns



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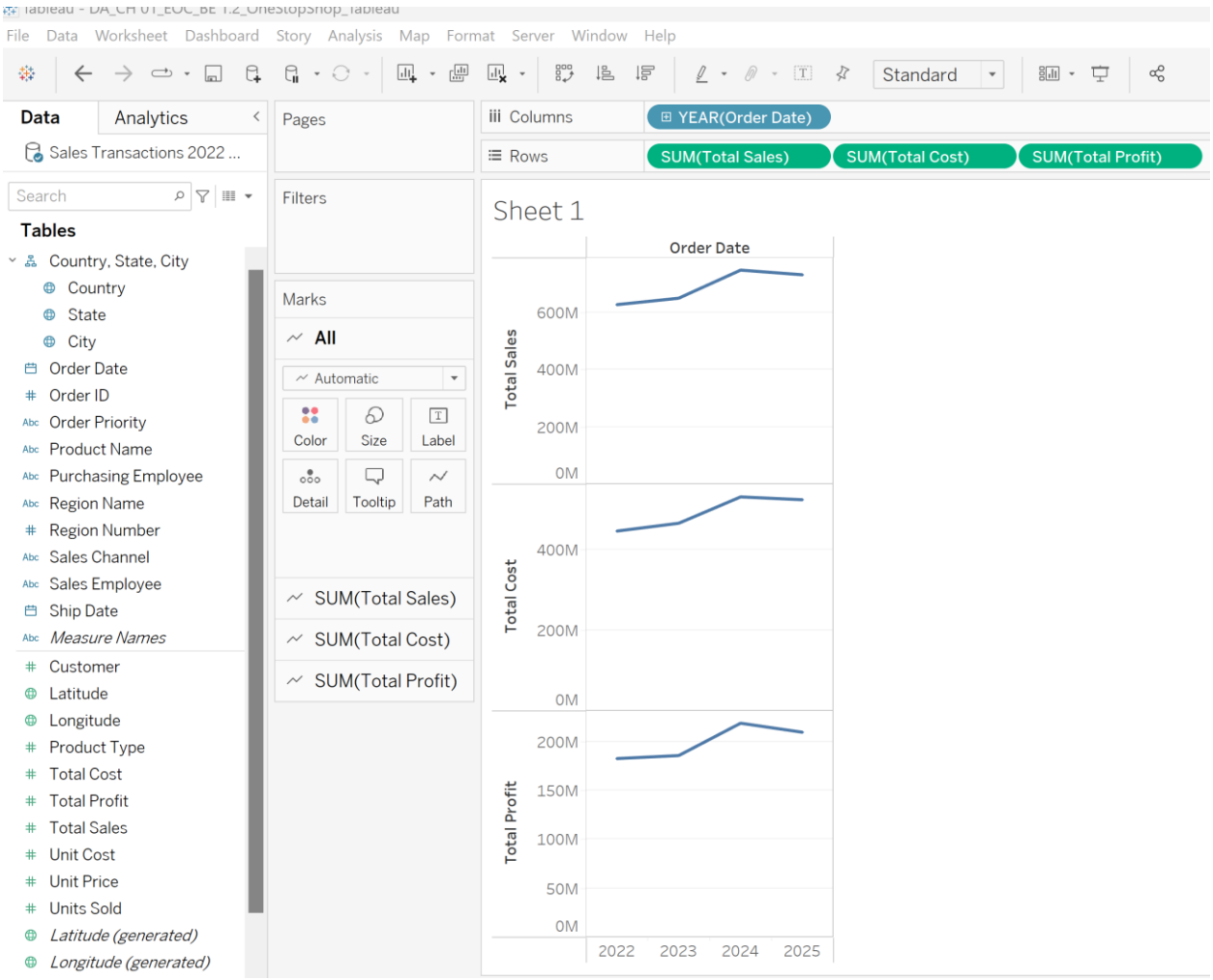
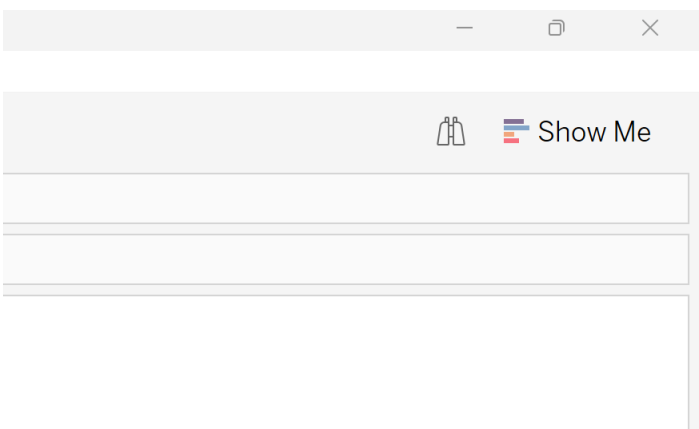
4. Drag Total Sales, Total Cost, and Total Profit to Rows:



5. Click on Show Me at the top right of the page:



6. Choose the Table visualization, which is the first choice in the first row of visualizations to choose from:

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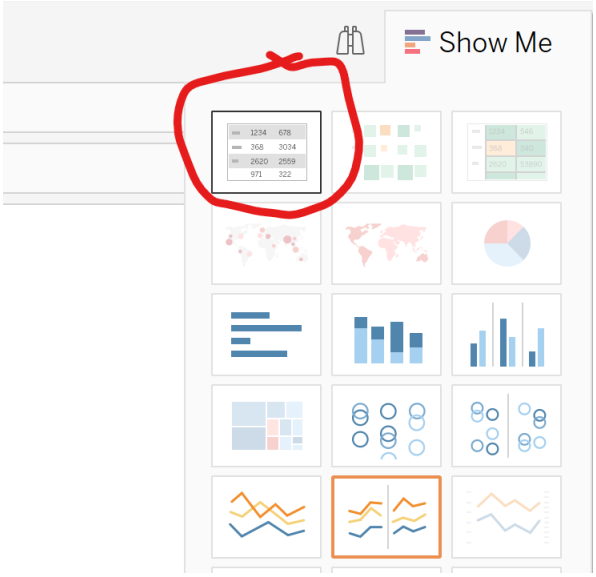
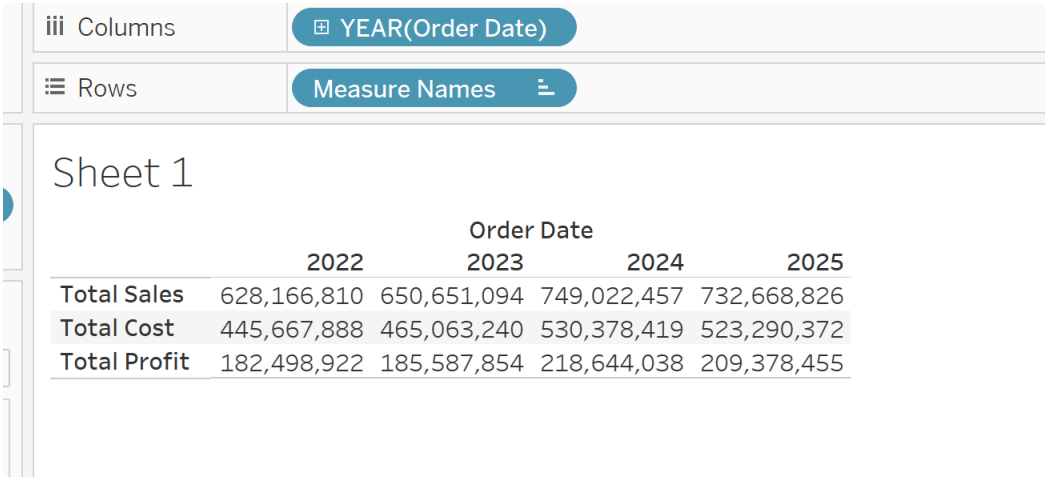


7. Now your visualization should look like this:



	Order Date			
	2022	2023	2024	2025
Total Sales	628,166,810	650,651,094	749,022,457	732,668,826
Total Cost	445,667,888	465,063,240	530,378,419	523,290,372
Total Profit	182,498,922	185,587,854	218,644,038	209,378,455

Note: If your measures are not in the correct order, you can click and drag them in the Marks pane to be in the correct order:

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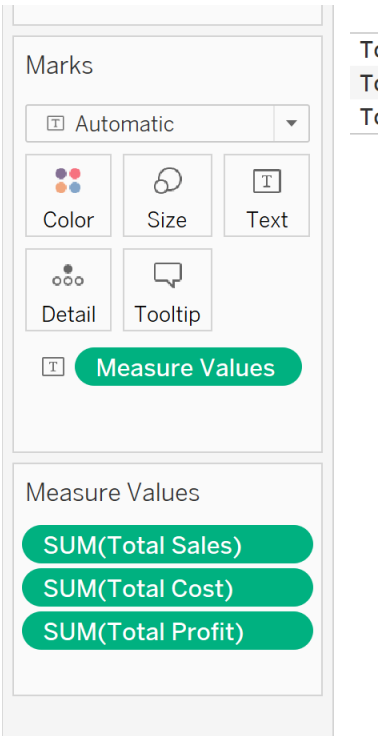

8. Add a total column by clicking on Analysis in the tool bar, then choose Totals and Show Row Grand Totals:

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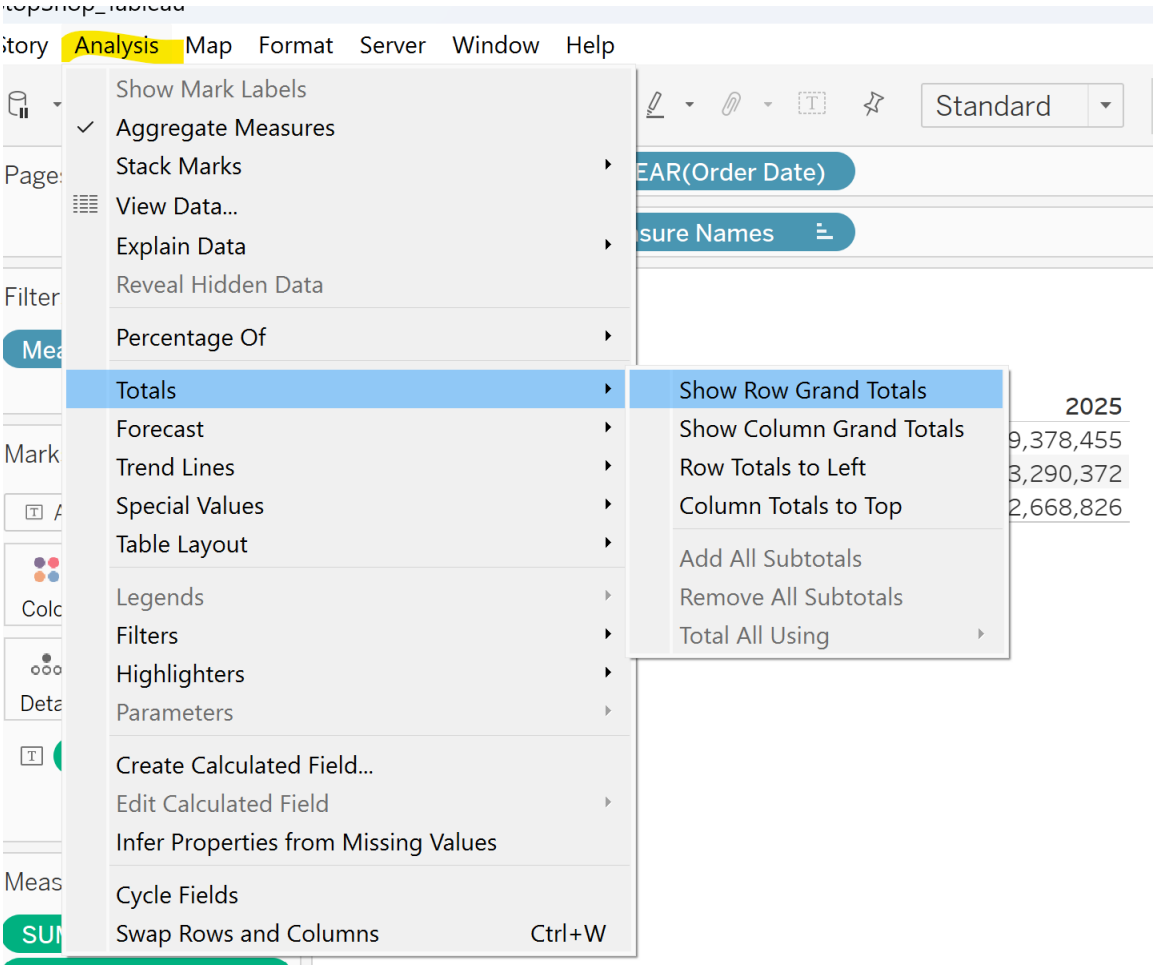
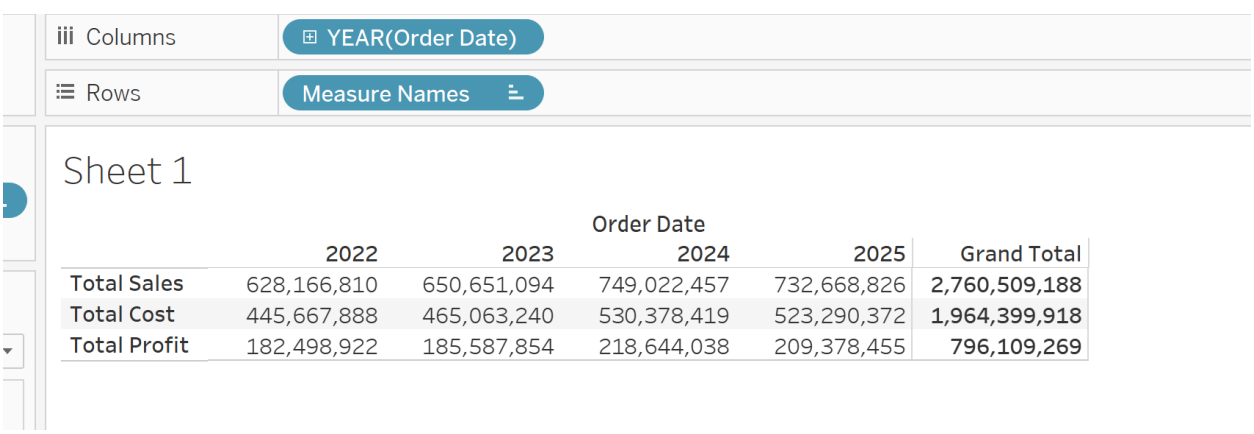


9. Your results should look like this:



	Order Date				
	2022	2023	2024	2025	Grand Total
Total Sales	628,166,810	650,651,094	749,022,457	732,668,826	2,760,509,188
Total Cost	445,667,888	465,063,240	530,378,419	523,290,372	1,964,399,918
Total Profit	182,498,922	185,587,854	218,644,038	209,378,455	796,109,269

10. Right click on Sheet 1 and change the name to One Stop Shop Sales, Cost, and Profit: 2022 – 2023:

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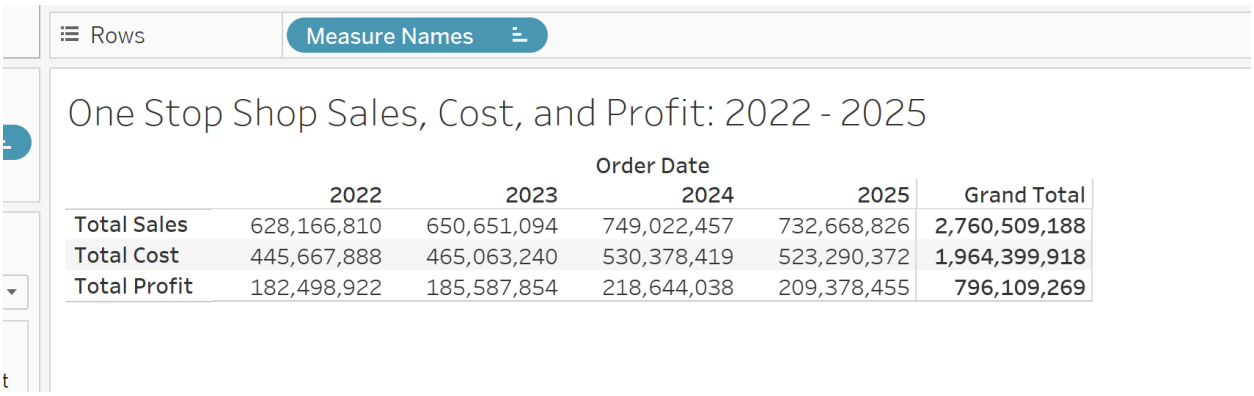
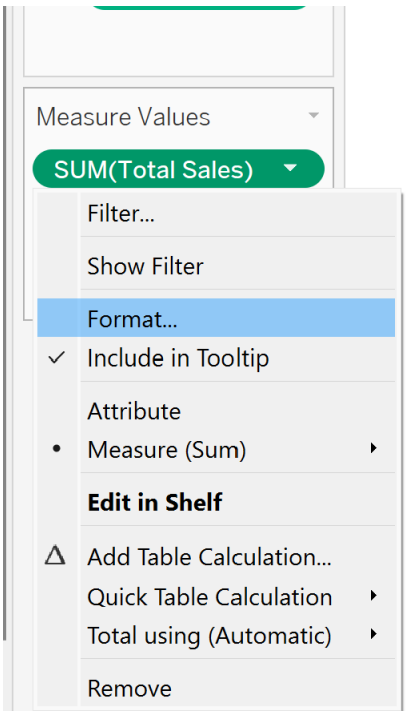


	Order Date				
	2022	2023	2024	2025	Grand Total
Total Sales	628,166,810	650,651,094	749,022,457	732,668,826	2,760,509,188
Total Cost	445,667,888	465,063,240	530,378,419	523,290,372	1,964,399,918
Total Profit	182,498,922	185,587,854	218,644,038	209,378,455	796,109,269

11. To change the format to currency, click the down arrow in each of the measures and choose Format:



12. In the Format pane, choose Currency (Custom) and change the decimal places to 0.

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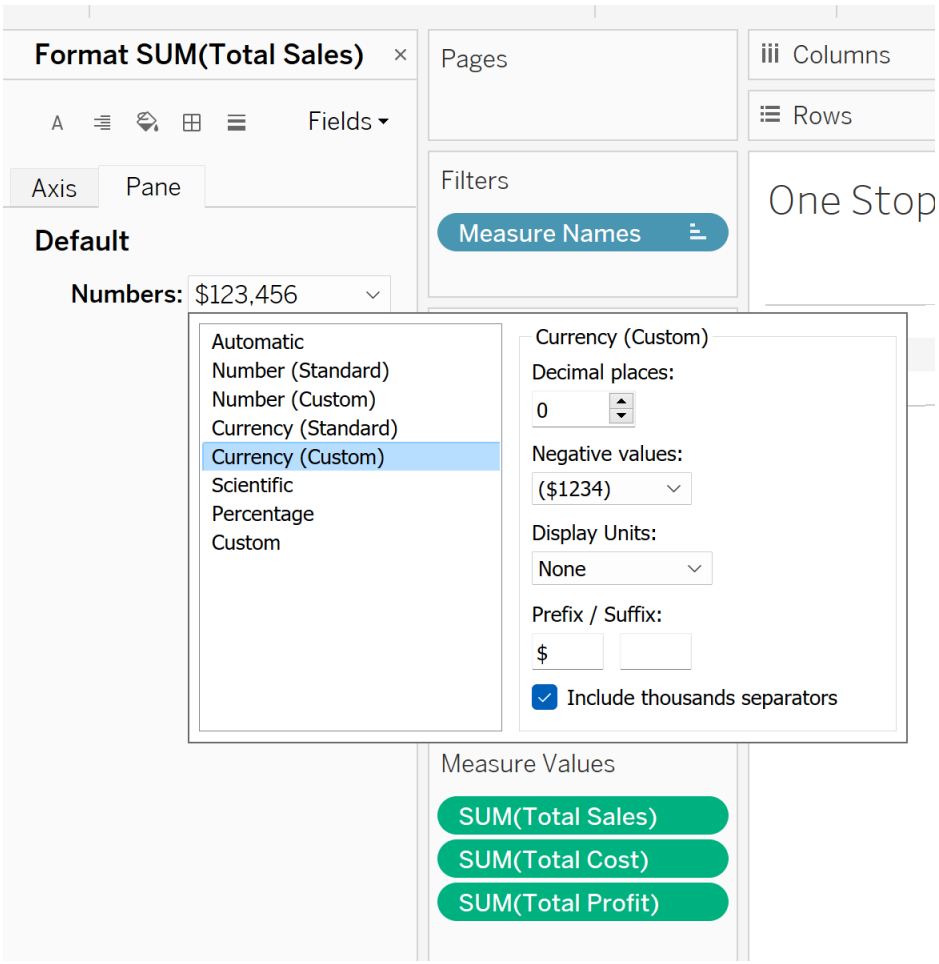

13. Repeat the formatting process for Total Cost and Total Profit.
14. Your final result should look like this:

One Stop Shop Sales, Cost, and Profit: 2022 - 2025

	Order Date				
	2022	2023	2024	2025	Grand Total
Total Sales	$628,166,810	$650,651,094	$749,022,457	$732,668,826	**$2,760,509,188**
Total Cost	$445,667,888	$465,063,240	$530,378,419	$523,290,372	**$1,964,399,918**
Total Profit	$182,498,922	$185,587,854	$218,644,038	$209,378,455	**$796,109,269**

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Solution Manual

Chapter 1: Data and Analytics in the Accounting Profession
Continuing Case: Le Grind Coffee Distributors

(data) (financial accounting) (managerial accounting)

Le Grind Coffee Distributors

Mara Comas and Javier Bianchi often tell the Le Grind Café customers the story of how they fell in love the first time they literally bumped into each other at a coffee shop near their Austin, Texas campus. At that time, they were sophomores majoring in business. After mutually apologizing to each other, they learned of their shared passion for great coffee and delicious baked goods. They described similar dreams of developing a coffee distribution business that sold the highest quality award-winning organic, fair-trade roasted coffee beans. Their following dates were spent finding, visiting, and evaluating as many highly rated coffee shops and bakeries as they could afford!

Fast forward ten years: After graduating and working in professional accounting for five years, Mara and Javier officially started their "Le Grind Coffee Distributors" business three years ago in Austin, Texas. Their suppliers provide year-round organic, fair-trade coffee from Columbia, Ethiopia, Guatemala, and Hawaii. Le Grind roasts and sells coffee in 5- and 10-pound vacuum sealed bags so that it stays fresh and has a reliable transport and shelf life until use. The roasting variety includes light roast, medium roast, dark roast, and expresso. Le Grind added a new coffee from Uganda in their second year. Also, Le Grind has developed two coffee blends, a pumpkin spice seasonal product for the autumn, and a holiday spice seasonal product for year-end festivities.

In their first year, they built their business distributing coffee to many customers in Texas, Oklahoma, and New Mexico. During their second year, they expanded to Louisiana and Arkansas. During their third year, the expanded further to new customers in Alabama, Mississippi, and Tennessee. They have enjoyed continuous growth each year and are now serving many customers coffee shops, restaurants, hotels, grocery stores and corporations (such as accounting firms) in these eight U.S. states.

Mara and Javier are thrilled about how their accounting education prepared them for their successful business launch. However, even though they enjoy growth in new customers and increasing sales revenues and net income each year, they are interested in performing data analysis to better understand what is happening to their sales sales mix that could be negatively impacting their gross margin (Gross Profit/Sales Revenues), which has decreased 2.4% between 2023 and 2025. Here are their summary comparative income statements from the past three years:

Le Grind Comparative Income Statements

	2023		2024		2025	
Sales Revenues	$ 6,131,630	100 %	$ 58,968,728	100 %	$ 202,203,305	100 %
Cost of Goods Sold	3,418,642	55.8%	33,284,937	56.5%	117,635,222	58.2%
Gross Profit	2,712,988	44.2%	25,683,791	43.5%	84,568,083	41.8%
Operating Expenses	1,839,489		18,575,212		62,683,025	
Net Income	**$ 873,499**		**$ 7,108,579**		**$ 21,885,058**	

Question 1 in Chapters 3-9 prepare or perform the sequential steps in the MOSAIC project stages.
Question 2 is an independent question in each chapter based on the Le Grind company and data.

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Although the Le Grind context is the same in all chapters, each chapter provides the input data specific for that chapter's questions.

The data has been provided in Chapter 1 questions to familiarize yourself with the available data but using this data is not necessary to answer the case questions in this chapter.

Case Questions:

CC 1.1(a): For each of the three PAR stages, briefly explain what would be accomplished in a data analysis project designed to better understand why Le Grind's gross margin is decreasing over the years 2023-2025.

CC 1.1(b): For each of the SPARKS critical thinking elements, provide an application example for this gross margin data analysis project.

CC 1.2: Provide examples of the professional skills and self-service business intelligence (SSBI) software tools that accountants could use to perform the data analysis project to better understand the decline in Le grind's gross margin.

Solutions:

CC 1.1(a) This data analysis project's purpose is to describe and diagnose why Le Grind's gross margin has decreased from 2023 to 2025. Listed here are brief explanations for what could be accomplished in each of the PAR stages for this project:

Planning stage:

Motivation: The owners want to understand why gross margin has decreased from 2023-2025.

Objective: To describe the behavior of the determinants of gross margin from 2023-2025 and to diagnose what is causing the decrease in gross margin over this three-year period. Of particular interest might be what is happening to gross profit by customer type, by state, or by coffee origin.

Strategy: The data strategy is to use the customer, sales revenues, and cost of goods sold data provided. The analysis strategy is to discover how sales revenues and how cost of goods sold are changing across this three-year period.

Analysis stage:

Prepare data: The customer, sales revenues and cost of goods sold data needs to be evaluated (and corrected if necessary) for issues such as missing and incorrect data.

Build information models: After the data has been prepared, different measures need to be calculated, such as total sales revenues and total cost of goods sold.

Explore the data further: Then, the total sales revenues can be explored by customer, product, state, and coffee origin.

Reporting stage

Interpret the results: Before an accountant forms their judgment from the data analysis results, they need to verify that the data and analysis used are valid and accurately performed for the objective questions that were asked.

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Communicate results: A summary of the data and analysis performed, with proper visualizations of the results and the accountant's judgment need to professionally communicated to the primary stakeholders who requested the analysis, in this case, the owners Mara Comas and Javier Bianchi.

CC 1.1(b) Examples for each of the SPARKS critical thinking elements relevant to this data analysis of gross margin could include:

- **Stakeholders**: the primary stakeholders are Mara Comas and Javier Bianchi, the owners of Le Grind Coffee Distributors. Other stakeholders include the customers, the suppliers, and the employees.
- **Purpose**: the purpose is to better understand the drivers of gross margin, so that owners can devise better strategies for future sales revenues and cost of goods sold. For example, is sales volume, or sales price, or product cost impacting their gross margin results? This purpose is important because 2.4% of the total sales revenue for the three years ($ 267,303,663) is $ 6,415,288 that could have been earned over these three years!
- **Alternatives**: Several possible objective questions, data, analysis, and visualization alternatives should be considered before deciding on the specific preferences for this data analysis project. Each alternative can be ranked based on the factors important to the project's purpose so that the best alternative is always chosen. For example, if the product price and cost of goods sold stay constant throughout this period, the data strategy may best be performed using sales volume and product profit margin data.
- **Risks**: Both internal and external risks should be considered as this project is performed. Examples of internal risks include the biases, assumptions, knowledge, and skills of the person completing the analysis and the accountant forming their professional judgment about the results. External risks include data issues and technology unknowns that could negatively impact the analysis and results.
- **Knowledge**: To proficiently perform this analysis, financial accounting, managerial accounting, data cleaning knowledge, and knowledge of how to use one or more of the self-service business intelligence tools (SSBI) from the chapter is required to result in a valuable conclusion. For example, Alteryx could be used to prepare the data, and then PowerBI to build the information models and visualize the results.
- **Self-Reflection:** Each of the steps in the PAR stages are enhanced when the data analyst leverages what they had learned before as well as what lessons they can use in future projects. For example, if consistent data errors are discovered during the data preparation step, then changes could be suggested for the AIS internal controls. Alternatively, the growth in sales in each state may help explain where Le Grind should allocate its marketing resources in the future.

CC 1.2 Professional Skills and SSBI tools needed for this gross margin data analysis project.

The professional skills that would be valuable for this gross margin data analysis project are:

- **Critical Thinking**: the disciplined reasoning throughout the PAR stages of the MOSAIC process.
- **Data Literacy**: the ability to understand the data that creates the sales revenues, cost of goods sold, and gross profit for Le Grind Coffee Distributors.
- **Technology Skills**: so that accountants can be more efficient and accurate with their analysis stage steps of data preparation, information model building, and data exploration

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- **Communication Skills**: so that accountants can be most effective in their creation of visualizations and their story telling, either in writing or presentation, of their analysis results and concluding professional judgments.

The self-service business intelligence (SSBI) software tools available to accountants to perform this analysis are numerous and changing every day as new tools enter the market. At the time of this textbook publication, some of the leading SSBI tools in the accounting profession are Excel, PowerBI, Tableau, and Alteryx.

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ANSWERS TO EXCEL CASE: COOKIES CARES CHARITABLE FOUNDATION

1. $12,224,869.38

Step-by-Step Instructions:

1. Highlight the data in Column E (“Payment Amount)
2. The answer will appear on the bottom right ribbon as “Sum: $XXX”

OR

1. Create a Pivot Table > select cell A1 > on the ribbon select “Insert” > Select “Pivot Table” > Select “OK”
2. Drag “Payment Amount” field onto Values pane
3. Highlight cell A4 and select “$” from the Numbers ribbon to convert the value into a dollar amount
4. The answer will appear under “Sum of Payment Amount” in cell A4

2. (a) FY19 $2,691,082.68; (b) FY20 $2,712,863.41; (c) FY21 $3,246,755.35; (d) FY22 $3,574,167.93

Step-by-Step Instructions:

1. Create a Pivot Table > select call A1 > on the ribbon select “Insert” > Select “Pivot Table” > Select “OK”
2. Drag “Payment Amount field onto Values pane”
3. The answer to Question 1 will appear
4. Drag the “Payment Date” field to the Rows Pane (Hint: The “Payment Date” field must be formatted as “Years” in the drop down in the Rows Pane)
5. Highlight the values in cells B4-B8 and select “$” from the Numbers ribbon to convert the values into dollar amounts
6. The answers will appear in cells B4-B7

3. 1,277

Step-by-Step Instructions:

1. Highlight the data in Column A (“Payment Reference Number”
2. The answer will appear on the bottom right ribbon as “Count: XX”

OR

1. Create a Pivot Table > select call A1 > on the ribbon select “Insert” > Select “Pivot Table” > Select “OK”
2. Drag “Payment Reference Number” field onto Values pane
3. Convert “Payment Reference Number” value from Sum to Count by clicking on the drop-down within the Values pane > Select “Value Field Settings…” > Select “Count”> Select “OK”
4. The answer will appear in Cell A4

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4. (a) FY19 159; (b) FY20 215; (c) FY21 404; (d) FY22 499

Step-by-Step Instructions:

1. Create a Pivot Table > select call A1 > on the ribbon select “Insert” > Select “Pivot Table” > Select “OK”
2. Drag “Payment Reference Number” field onto Values pane
3. Convert “Payment Reference Number” value from Sum to Count by clicking on the drop-down within the Values pane > Select “Value Field Settings…” > Select “Count”> Select “OK”
4. The answer to Question 3 will appear.
5. Drago the “Payment Date” field to the Rows Pane (Hint: The “Payment Date” field must be formatted as “Years” in the drop down in the Rows Pane)
6. The answers will appear in Cells B4-B7

5. 3

Step-by-Step Instructions:

1. Create a Pivot Table > select call A1 > on the ribbon select “Insert” > Select “Pivot Table” > Select “OK”
2. Drag “Bank” field onto Rows pane
3. The answer will appear

6. Bank of America; $8,011,623

Step-by-Step Instructions:

1. Create a Pivot Table > select call A1 > on the ribbon select “Insert” > Select “Pivot Table” > Select “OK”
2. Drag “Bank” field onto Rows pane
3. Drag “Payment Amount” field onto the Values pane
4. Highlight the values in cells B4-B6 and select “$” from the Numbers ribbon to convert the values into dollar amounts.
5. Optional: Select the drop down next to “Row Labels” > Select “More Sort Options…” > Select “Descending (Z to A) by” bullet > Select drop down > Select “Sum of Payment Amount” > Select “OK”
6. The answer will appear at the top of the pivot table in Cell B4 (if optional sort was applied)

7. Faithful Representation

8. C – The provided data does not include charitable donations processed by Truist

9. (a) .81%; (b) 19.68%; (c) 10.08%

Step-by-Step Instructions:

1. Create a Pivot Table > select call A1 > on the ribbon select "Insert" > Select "Pivot Table" > Select "OK"
2. Drag “Payment Date” field onto Rows pane
3. Drag “Payment Amount” field onto Values pane
4. Drag “Payment Amount” field onto Values pane a second time
5. Make sure the Pivot Table is sorted by year from oldest to most recent

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6. Highlight Cells B4-B7 and select “$” from the Numbers ribbon to format as dollar amounts
7. To calculate the variance from year to year: highlight Cells C4-C7 > Right Click > “Show Values As” > “% Difference From” > Select “Years” as your Base Field > Select “(previous)” as your Base Item > Select “OK
8. The answer will appear as percentages in Cells C5-C7

10. a- Yes11. d - Timeliness

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ANSWERS TO TABLEAU CASE: COOKIES CARES CHARITABLE FOUNDATION

1. $12,224,869.38

Step-by-Step Instructions:

1. Open a new sheet
2. Drag “Payment Amount” measure pill onto the Text marks or the center of the blank canvas
3. The answer will appear

2. (a) FY19 $2,691,082.68; (b) FY20 $2,712,863.41; (c) FY21 $3,246,755.35; (d) FY22 $3,574,167.93

Step-by-Step Instructions:

1. Open a new sheet
2. Drag “Payment Date” dimension pill onto rows shelf (it should automatically format as a YEAR)
3. Drag “Payment Amount” measure pill onto the Text marks tile
4. Ensure the drop down under the Marks tile is set to “Text”
5. The answers will appear in a table

3. 1,277

Step-by-Step Instructions:

1. Open a new sheet
2. Drag “Foundation Data (Count)” measure pill onto the Text marks tile
3. Ensure the drop down under the Marks tile is set to “Text”
4. The answer will appear

4. (a) FY19 159; (b) FY20 215; (c) FY21 404; (d) FY22 499

Step-by-Step Instructions:

1. Open a new sheet
2. Drag “Foundation Data (Count)” measure pill onto the Text Marks tile
3. Ensure the drop down under the Marks tile is set to “Text”
4. Drag “Payment Date” dimension pill onto Rows Shelf
5. The answers will appear in a table

5. 3

Step-by-Step Instructions:

1. Open a new sheet
2. Drag the “Bank” dimension pill to the Rows shelf
3. Select the drop down on the “Bank” dimension pill in the Rows shelf > Select “Measure” > Select “Count (Distinct)”
4. Drag the now green “Bank” measure dimension from the Rows shelf to the Text marks tile

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5. The answer will appear as a number

6. Bank of America; $8,011,623

Step-by-Step Instructions:

1. Open a new sheet
2. Drag “Bank” dimension pill onto rows shelf
3. Drag “Payment Amount” measure pill onto the chart
4. Select the drop down on the “Bank” dimension pill on the Rows Shelf > Select “Sort” > Set your “Sort By” to “Field” > Select the “Descending” radial dial > Set your “Field Name” to “Payment Amount” > Set your “Aggregation” to “Sum”
5. The answer will appear as the first bank in the table

7. Faithful Representation

8. C – The provided data does not include charitable donations processed by Truist

9. (a) .81%; (b) 19.68%; (c) 10.08%

Step-by-Step Instructions:

1. Open a new sheet
2. Drag the “Payment Date” dimension pill onto the Rows Shelf
3. Drag the “Payment Amount” measure pill onto the Text marks tile
4. Select the drop down on the “Payment Amount” measure pill in the Text Marks tile > Select “Quick Table Calculation” > Select “Percent Difference”
5. The answers will appear in a table

10. a - Yes

1.

11. d - Timeliness

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Chapter 1: Data and Analytics in the Accounting Profession

Teaching Guidance

Chapter Adoption:

This chapter should be assigned at the beginning of the term. The chapter provides the foundation knowledge for the data analysis process and the critical thinking framework that is used throughout the course.

This chapter can be covered using about 3 hours of classroom time. The following table provides suggestions for the time spent in class each section of the chapter.

Learning Objective	Time (Hours)
LO1: Summarize how advances in data and technology are impacting accounting professionals	0.5
LO 2: Describe the states of the data analysis process	0.5
LO 3: Identify the skills necessary to perform data analyses.	0.5
LO 4: Explain how to apply a data analytics mindset to the data analysis process	1.5

Lesson Plan:

	Activities	Student Resources
Prework Assignment for Day 1	• View Chapter Introduction Video • Read Chapter 1 • Complete review questions 1 – 10 • Brief Exercise 1.6	Apply It Videos: 1.2 and 1.4
Day 1: LO 1, LO 2, and LO 3	• Discuss how data analytics is impacting the accounting profession. • Review examples of data analytics in each area of accounting (illustrations 1.3 – 1.7) • Review brief exercise 1.6	Walk-Through Video Solution for Brief Exercise 1.6

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Prework Assignment for Day 2	Complete Exercises 1.3 and 1.5	Walk-Through Video Solution for Exercise 1.1, 1.3 and 1.5
Day 1: LO 4	• Review the SPARKS framework • Review exercises 1.3 and 1.5 solutions	
Suggested Homework	Exercises 1.7 and 1.8	
Suggested Assessment	Test Bank questions and Professional Application Case	Walk-Through Video Solution for PAC 1.1

Student Engagement Suggestions

We typically start class by asking students to discuss in which area of accounting they would like to work. Keep a tally on the white board. After tallying the number of students in each area of accounting, discuss that regardless of their accounting focus, data and analytic skills are in high demand. Ask a student from each of the areas of accounting to give an example of how data and analytics are being used in that area. It can be from what that they read about in the chapter or from personal experience. For example, if students have completed an internship, they may have examples of data and analytics they saw during their internship.

Other Engagement Activities

Depending on instructor preference, the PowerPoint slides that accompany the chapter can be reviewed by the students on their own or reviewed in class.

We suggest letting students complete a "think, pair, and share" exercise for the review questions in the chapter. Each pair of students can discuss a different review question and then present their answer to the class. We have found this to be an effective way to review the chapter material and to keep students engaged.

Assessment of Learning

This chapter focuses on establishing foundation knowledge about the data analysis process and how to apply critical thinking elements during that process. The chapter also provides information about how data and analytics are being used in the accounting profession, and the skills needed to succeed. We recommend that instructors provide students the opportunity to practice applying data analysis process and critical thinking skills.

The end of chapter multiple choice questions can be used for a quick in class assessment of whether the students read and understood the material. Instructors can start the first or second day of chapter coverage with an in-class quiz using the multiple-choice questions. Students can work individually or in groups to complete the questions and then discuss their answers.

The professional application case (PAC) provides students the opportunity to evaluate prepared data analyses, as well as to prepare additional analyses. These questions cover the areas of audit, financial accounting, managerial accounting, and tax accounting. Instructors can use the PAC questions on an exam or as an assignment.

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The continuing case (Le Grind) can be used as an individual or team assignment to give students practice thinking about the data analysis process and how to apply critical thinking.

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Instructor's Manual

Chapter 1—Accounting as Information

I. Chapter Learning Objectives
II. Pre-lecture Activities
    a. Warm Up Discussion
    b. Pre-Lecture Activity for LO4
III. In-class Activities
    a. Individual Activity
    b. Group Activity
    c. Online Activity
IV. Sample Syllabus

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I. Chapter Learning Objectives:

1.1 Explain how accounting affects both the demand for and supply of information

1.2 Compare and contrast traditional transaction-based accounting systems with process-based information systems

1.3 Explain management's relationship to information and information systems

1.4 Describe the relationship between accounting and data analytics

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II. Pre-lecture Activity

Estimated time: 15 minutes

a) Begin with a humorous and interactive activity.

Write the question on the board: “What is it really like to be an accountant?” Let students talk and express their opinions honestly. Encourage them to speak their minds. Write down their responses on the board. They may or may not be close to reality. Tell them that there are many erroneous assumptions about the accounting field and the people working in it. But the truth is that being an accountant might be much more interesting than they think. It is a myth that accountants are math nerds, boring, and unfriendly. That accounting work is not creative, is rigid, and tax-focused are myths too. Accounting is a robust and multifaceted career.

b) Time permitting you can add another activity.

Ask them, "Do you personally know someone who is an accountant? Who is that person? What do they do in accounting?” This activity can flow well if they know about different fields of accounting, or if students choose accounting as a major because someone inspired them. The idea is to tell students that accounting is a multifaceted career that overlaps with information systems, data analytics, and management.

LO-1 and 3, Bloom’s: Application, Difficulty: Medium, AACSB: Knowledge, AACSB: Communication, AICPA AC: Research, AICPA PC: Professional Behavior, AICPA BC: Governance Perspective, Section 1- 1 and 1-3

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III. In-class Activities

a) Individual Activity
Estimated time 20 min

Refer to illustration 1.17 and write an essay in a MS Word document (at least 300 words), explaining in your own words the relationship between data, useful information, and decision making. Ensure you define and explain the differences between reporting and data analytics in your writing. Be prepared to present your explanation to the class. (A few students can be randomly chosen to read their answers to the class.)

LO-4, Bloom's: Synthesis, Difficulty: Hard, AACSB: Analytic, AACSB: Data Analytics, AACSB: Communication, AICPA AC: Reporting, AICPA AC: Technology and Tools, AICPA PC: Communication, AICPA BC: Process and Resource Management Perspectives, Section 1-4

b) Online- Activity
Estimated Time: 25 min

Open the link below and watch the video about the characteristics of useful information.

Accounting Information Systems - Lesson 1.3 - Characteristics of Useful Information - Bing video

1. What are the seven characteristics of a piece of information that make it useful for a manager, according to the video? Explain any two in detail.
2. Why must you consider the costs of providing information against the benefits that can be derived from using it? This can be found from reading the text or exploring the internet. A few related websites are:

   Cost constraint definition — Accounting Tools

https://www.universalcpareview.com/ask-joey/what-is-a-cost-constraint/

Type your answers in a MS Word document. Please save the file as your first name-OnlineActivityCH1 and upload it to your course shell.

Answer

1. Relevant
2. Reliable
3. Complete
4. Timely
5. Understandable
6. Verifiable
7. Accessible

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LO-3, Bloom's: Application, Difficulty: Medium, AACSB: Analytic, AACSB: Communication, AICPA AC: Measurement, Analysis and Interpretation, AICPA AC: Systems and Process Management, AICPA PC: Communication, AICPA BC: Strategic Perspective, Section1-3

c) Group Activity
Estimated time 25 min
Open the link below:

Accounting Information Systems - Lesson 1.8 - Value Added by AIS - Bing video

Form groups of 3 to 4 students per group and type your answers in a MS Word document. Please save the file as group members' first names-GpActivityCH1 and upload it to your course shell. The assignment should answer the following questions:

1. According to the video**,** what values are added by a well-designed and implemented accounting information system (AIS) in an organization?
2. Discuss the values you listed in the above question. Provide examples for each value added by AIS in a particular scenario.

Answer:

1.

Improve efficiency within the organization.

Sharing knowledge throughout the enterprise.

Improving the effectiveness and efficiency of the supply chain.

Improving the quality and cost of products and services.

Improving the internal control structure.

Improving decision making.

2.

Student answers will vary. A well-designed and implemented AIS can help improve cost control measures and processes. AIS can track specific costs per job, thus the unit cost per job can be calculated when a company takes different job orders. It can streamline the production process and identify overheads and bottlenecks. User access control measures can be placed in an AIS to prevent risks of data loss and breach.

LO-1, Bloom's: Synthesis, Difficulty: Hard, AACSB: Analytic, AACSB: Technology, AICPA AC: Measurement, Analysis and Interpretation, AICPA AC: Risk Assessment, Analysis and Management, AICPA AC: Reporting, AICPA PC: Collaboration, AICPA PC: Communication,

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AICPA BC: Governance Perspective, AICPA BC: Strategic perspective, AICPA BC: Process and Resource Management Perspective, Section 1-1

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IV. Sample Syllabus

Instructor:
Meeting Times:
Meeting Location:
Phone:
Office Hours:
Email:
Office:

Course Description

The ever-changing accounting profession demands an enhanced set of skills from future accounting professionals. This course develops the professional skills you need to be ready for tomorrow's workplace, with a practitioner perspective to help you understand how concepts are applied in the workplace, and why these concepts and skills are important.

From the start of the course, you will work through Julia's Cookies, a running case story that helps you contextualize and apply concepts. This will help you to understand how various systems and technologies come together to support a business, and how those systems evolve alongside a growing company. The course material includes:

- Sample LinkedIn job posts that demonstrate the importance of the roles an individual in the field might take and the skills they would require for a particular position, connecting real job opportunities to course content and allowing you to visualize the different career paths available to you.
- Career advice from a diverse selection of featured professionals.
- Emerging trends and technologies like artificial intelligence, machine learning, robotic process automation, and blockchain.
- Data analysis and visualization using leading-edge software and real-world datasets.

Required Textbook

Savage, A., Brannock, D. & Foksinska, A (2021). *Accounting Information Systems: Connecting Careers, Data, and Systems*. New Jersey: Wiley

Course Technology Requirements:

Tableau is a data visualization software that we will be using every week. Download Tableau:

https://www.tableau.com/academic/students

You must download Tableau before the first class.

Course Objectives

Upon the completion of this course, you will be able to:

1. Identify and assess the risks associated with accounting information systems.
2. Assess standard business processes.
3. Use internal controls to mitigate risk in information systems and business processes.

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4. Perform data analytics using visualization.
5. Discuss emerging and disruptive technologies impacting the accounting profession.

Course Outline, Assignments and Grading

Chapter Topic	Readings Due	Assignments Due
Accounting as Information	Ch 1	○ Chapter 1 Quiz ○ Chapter 1 Tableau Case ○ Chapter 1 Discussion
Risks and Risk Assessments	Ch 2	○ Chapter 2 Quiz ○ Chapter 2 Tableau Case ○ Chapter 2 Discussion
Risk Management and Internal Controls	Ch 3	○ Chapter 3 Quiz ○ Chapter 3 Tableau Case ○ Chapter 3 Discussion
Software and Systems	Ch 4	○ Chapter 4 Quiz ○ Chapter 4 Tableau Case ○ Chapter 4 Discussion
Exam 1		
Data Storage and Analysis	Ch 5	○ Chapter 5 Quiz ○ Chapter 5 Tableau Case ○ Chapter 5 Discussion
Designing Systems and Databases	Ch 6	○ Chapter 6 Quiz ○ Chapter 6 Tableau Case ○ Chapter 6 Discussion
Emerging and Disruptive Technologies	Ch 7	○ Chapter 7 Quiz ○ Chapter 7 Tableau Case ○ Chapter 7 Discussion
Documenting Systems and Processes	Ch 8	○ Chapter 8 Quiz ○ Chapter 8 Tableau Case ○ Chapter 8 Discussion
Exam 2		
Human Resources and Payroll Processes	Ch 9	○ Chapter 9 Quiz ○ Chapter 9 Tableau Case ○ Chapter 9 Discussion
Purchasing and Payments Processes	Ch 10	○ Chapter 10 Quiz ○ Chapter 10 Tableau Case ○ Chapter 10 Discussion
Conversion Processes	Ch 11	○ Chapter 11 Quiz ○ Chapter 11 Tableau Case ○ Chapter 11 Discussion
Marketing, Sales, and Collection Processes	Ch 12	○ Chapter 12 Quiz ○ Chapter 12 Tableau Case ○ Chapter 12 Discussion

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Financial Reporting Processes	Ch 13	○ Chapter 13 Quiz ○ Chapter 13 Tableau Case ○ Chapter 13 Discussion
Exam 3		
Information Systems and Controls	Ch 14	○ Chapter 14 Quiz ○ Chapter 14 Tableau Case ○ Chapter 14 Discussion
Fraud	Ch 15	○ Chapter 15 Quiz ○ Chapter 15 Tableau Case ○ Chapter 15 Discussion
Cybersecurity	Ch 16	○ Chapter 16 Quiz ○ Chapter 16 Tableau Case ○ Chapter 16 Discussion
Data Analytics	Ch 17	○ Chapter 17 Quiz ○ Chapter 17 Tableau Case ○ Chapter 17 Discussion
Reporting and Visualization	Ch 18	○ Chapter 18 Quiz ○ Chapter 18 Tableau Case ○ Chapter 18 Discussion
Exam 4		

Grading Distribution

Assessment	Percentage
Exams 1-4	40%
IndividualTableau Assignments	30%
Quizzes	20%
Chapter Discussions	10%
Total	**100%**

Assessment Details

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Exams: 40% of the final course grade. Please refer to the course schedule for the exam dates.

Individual Tableau Assignments: 30% of the final course grade. Students apply concepts individually through Tableau assignments.

***Quizzes:* 20%** of the final course grade. They are multiple choice, fill-in-the-blank, matching, etc. Students have two attempts, but results are averaged, so take them seriously the first time. They are due the day before initial discussions to ensure students have read/viewed the learning materials and are ready to engage.

Chapter Discussions: 10% of the final course grade. Your first Slack discussion for Chapter 1 is for practice only.

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Data and Analytics in Accounting: An Integrated Approach, 1st Edition

INSTRUCTOR'S MANUAL

Ann Dzuranin

Guido Geerts

Margarita Maria Lenk

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Instructor’s Manual to accompany Data and Analytics in Accounting: An Integrated Approach

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Chapter 1: Data and Analytics in the Accounting Profession

Chapter Overview

This chapter provides students with the foundational knowledge of the data analysis process and critical thinking framework that they will use throughout the course. The chapter begins with an overview of how the various areas of accounting have been affected by changes in data and technology. The Professional Insight at the beginning of the chapter highlights the skills needed to be successful in an accounting career. Leaders from KPMG and Deloitte discuss the importance of critical thinking and problem-solving skills. Their insights help to emphasize to students the importance of this course.

Data Analysis Process

This chapter introduces students to the data analysis process. Each stage of the process is discussed (Plan, Analyze, Report). See learning objective 2 discussion below for more details.

Chapter Data Sets

Chapter location	Dataset Name	Type of Business	File Type
Chapter examples	One Stop Shop	Wholesale distributor for convenience stores	Excel
Professional Application Case	Little Tots Daycare	Childcare services	Excel

Most of the chapter examples are applied to the company One Stop Shop. Below is a brief explanation of the company. More details are provided in the chapter.

One Stop Shop

One Stop Shop (OSS) is a wholesale distributor for convenience stores. The company started in San Francisco, California as a general store in 1888. Today OSS is one of the largest distributors of consumer goods in North America. OSS operates in Canda, Mexico and the United States. They have 15 regions and 30 distribution centers. Instructors should discuss with students the difference between a retail company and a wholesale company if students have not been exposed to wholesale companies.

Critical Thinking Application

The chapter introduces students to the six elements of critical thinking that should be applied throughout the data analysis process. The elements are grouped together in the mnemonic: SPARKS. The last learning objective in the chapter discusses each of the elements in more detail. Illustration 1.18 provides the SPARKS model:

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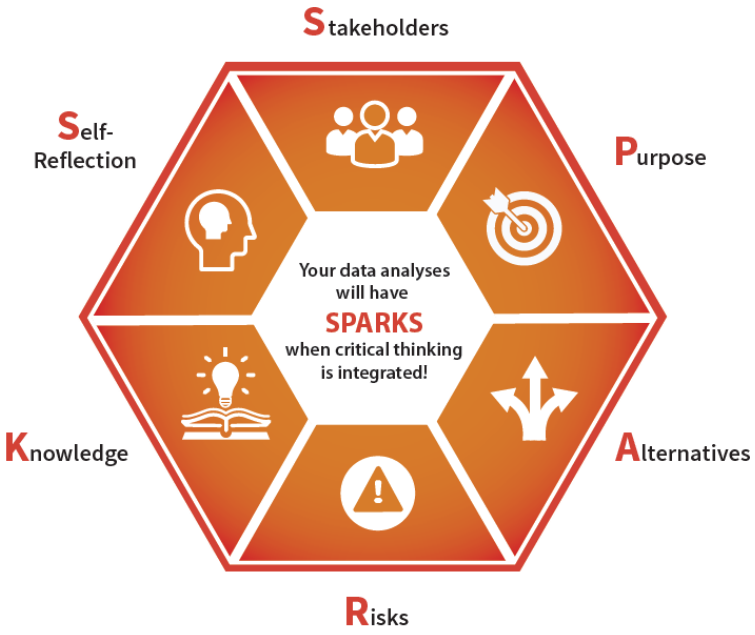

Illustration 1.21 provides a summary of the elements and discussion of why the elements are important to consider when conducting a data analysis.

Critical Thinking		Definition	Why It Matters
S	Stakeholders	Parties impacted by the data analysis results.	The potential impacts guide analysis and communication choices.
P	Purpose	The reason driving the questions for the analysis.	Focusing on the purpose helps select the best data, analysis, interpretation, and communication options.
A	Alternatives	Every choice should be the best option available.	Generating and ranking alternatives helps us make good choices.
R	Risks	Consider all risks related to data, strategy, biases, and assumptions.	Anticipating risks improves data and analysis choices.
K	Knowledge	Proper analysis strategy and interpretation of results often depends on accounting, economics, industry, statistics, and technology knowledge.	Applying knowledge provides meaning to the data and to the results.
S	Self-Reflection	Reviewing each choice throughout the data analysis process (MOSAIC) reveals what worked best.	Reflecting on lessons learned helps improve future analyses.

We recommend spending time discussing this section of the chapter with students as the have likely not been exposed to a critical thinking framework in their other courses. Apply It 1.4 and Exercises 1.1 – 1.8 are all great tools to use in class to help students understand the critical thinking concepts and how to apply them to the data analysis process.

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Learning Objectives

The chapter learning objectives are listed in the following table along with the Apply It topic.

LEARNING OBJECTIVES	TOPICS	APPLY IT
LO 1.1 Summarize how advances in data and technology are impacting accounting professionals.	• Data and Technology • Analytics and Accounting Professional Practice	**Match Data Analytics to Accounting Areas**
LO 1.2 Describe the stages of the data analysis process.	• Stage 1: Plan • Stage 2: Analyze • Stage 3: Report • MOSAIC: Putting it All Together	**Explain the Data Analysis Process for a Fraud Risk Assessment** (Example: Auditing)
LO 1.3 Identify the skills necessary to perform data analyses.	• Critical Thinking • Data Literacy • Technology Skills • Communication Skills	**Evaluate the Relationships between Skills and Tasks** (Example: Tax Accounting)
LO 1.4 Explain how to apply a data analytics mindset to the data analysis process.	• Understand the Stakeholders • Identify the Purpose • Consider Alternatives • Assess Risks • Identify Knowledge • Perform Self-Reflection • SPARKS: A Critical Thinking Toolkit	**Integrate Critical Thinking with the Data Analysis Process** (Example: Auditing)

Learning Objective 1: Summarize how advances in data and technology are impacting accounting professionals

This learning objective helps to emphasize the importance of learning data analytics. Changes to the CPA and CMA exams related to data and technology are discussed as well as how new technologies enable accountants to use data and analytics to provide value to their clients and employers. Finally, the section gives students real examples of how data and analytics are being used auditing, financial, managerial, and tax accounting.

Learning Objective 2: Describe the stages of the data analysis process

Students are introduced to the data analysis process in this section. The process is broken down into three stages. The first stage is the planning stage. In this stage the motivation for the project, the specific objectives (questions to be answered), and strategy for conducting the analysis are established. The second stage is the analysis stage. In the analysis stage we prepare the data (ETL), build information models, and explore our data. The third stage is the report stage. In this stage we are interpreting the results of data analyses and communicating those results to stakeholders. We developed the mnemonic MOSAIC as a way for students to think about all the steps in the three stages. You can also refer to the data analysis as PAR (Plan, Analyze, Report). Although memorizing the specific mnemonic is not important, understanding and applying the stages of the data analysis process is critical for data analysis project success.

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Learning Objective 3: Identify the skills necessary to perform data analyses

We frequently hear the term "data analytics mindset" as a skill that accounting graduates need to possess. However, we are rarely given a definition or explanation as to what the phrase means. In this section of the chapter, we define data analytics mindset as the "professional habit of critically thinking through the planning, analysis, and interpretation of data results before communicating a professional choice or decision". We also discuss the data analysis skills that are in demand for accounting graduates: data literacy, technological agility, and communication skills. It's important to emphasize to students that this course will help them develop all these skills. We recommend discussing the professional insight "What Skills are Employers Looking For?". We also emphasize the information in Illustrations 1.16 and 1.17 that show the skills in demand for new graduates.

Learning Objective 4: Explain how to apply a data analysis mindset to the data analysis process

This section brings together the data analytics mindset with the data analysis process. Students are introduced to the six elements of critical thinking: Stakeholders, Purpose, Alternatives, Risks, Knowledge, and Self-reflection. These elements should be applied continually throughout the data analysis process. As students work through other chapters in the course, they will apply these elements of critical thinking. See the Critical Thinking Application discussion above for some suggestions.

Chapter Videos

There are several videos that students and instructors will find useful for this chapter. Two of the Apply Its are discussed in separate videos. Apply It 1.2 (The Data Analysis Process) and Apply It 1.4 (Use the Data Analytics Mindset) can be given to students to help them better understand the concepts and practice applying those concepts. There are also videos that discuss the answers to brief exercise 1-6, and exercises 1-1, 1-3, and 1-4. Finally, there is a video that reviews the solution to the professional application case auditing question.

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End of Chapter Materials

The end of chapter material contains multiple choice questions, review questions, brief exercises, exercises, problems, and a professional application case. There is also a continuing case available on the Wiley online platform. The table below indicates the accounting areas that relevant to a specific brief exercise (BE), exercise (EX), or problem (PR). The table also indicates questions that have data sets available.

		Course Application						Solution	
Question	**Data**	**General**	**AIS**	**Auditing**	**Financial**	**Managerial**	**Tax**	**Software**	**LO**
BE 1.1				**X**					**1**
BE 1.2	**X**				**X**			**E**	**1**
BE 1.3						**X**			**2**
BE 1.4						**X**			**2**
BE 1.5					**X**				**2**
BE 1.6					**X**				**2**
BE 1.7				**X**					**3**
BE 1.8							**X**		**3**
BE 1.9		**X**							**3**
BE 1.10		**X**							**4**
BE 1.11		**X**							**4**
EX 1.1						**X**			**2, 4**
EX 1.2				**X**					**2, 4**
EX 1.3					**X**				**2, 4**
EX 1.4			**X**	**X**					**2, 4**
EX 1.5				**X**					**2, 4**
EX 1.6					**X**				**2, 4**
EX 1.7					**X**	**X**			**2, 4**
EX 1.8							**X**		**2, 4**
PAC – Audit	**X**			**X**				**T**	
PAC – Financial	**X**				**X**			**T**	
PAC – Managerial	**X**					**X**		**E**	
PAC – Tax	**X**						**X**	**T**	

Software Solution Available: E = Excel, P = Power BI, T = Tableau

Professional Application Case

The professional application case in this chapter is a daycare center (Little Tots) located in a suburb of Atlanta. Although the data is fictitious, it is based on a real daycare center. Little Tots opened in 2023 and has had steady growth since. A balance sheet and income statement are provided for the years 2023, 2024, and 2025. A visualization is provided with information about the number of children enrolled at Little Tots for each year and whether they are full-time or part-time.

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Students are asked questions related to auditing, financial, managerial, and tax accounting. The questions are conceptual in nature. Students need to apply the concepts learned in the chapter to answer the case questions.

Continuing Case

Students are introduced to a case that is used throughout the course. The case follows a company called "Le Grind Coffee Distributors". Le Grind started in 2023 distributing organic, fair-trade roasted coffee beans in Texas, Oklahoma, and New Mexico. By 2025 they have expanded to five more states.

The company is struggling now to understand their business and determine why their gross profit margin is decreasing when sales revenues and income are growing. In this chapter, students are asked to briefly explain what would be accomplished in each of the data analysis process stages (Plan, Analyze, Report) designed to better understand Le Grind's decrease in gross margin. Students are then asked to provide an application example of each of the SPARKS critical thinking elements for the gross margin data analysis project.

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