Preparing Students for Future Careers

Analytics, AI, and Decision Making
Cengage B&E Product
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Skills Employers Value

Attributes
Employers
Seek on a
Candidate's
Resume



^{*} National Association of Colleges and Employers Job Outlook 2025 Report



Building a Problem-Solving Toolkit

Focus on Business Analytics

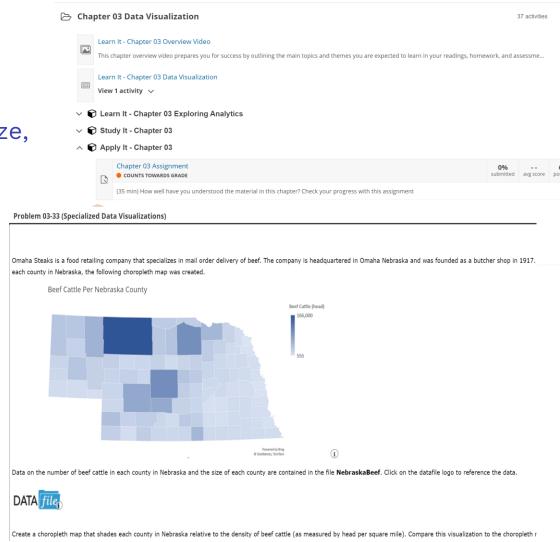
- Start with the business problem, not the data...
- Frame the question, gather data, then solve, analyze, and report

Employable Skills Framework

- Problem-Solving -> Step-by-step methods
- Analytical Thinking -> Interpreting the Results
- Ability to Communicate -> Data Visualization and Storytelling

Intentional and Authentic Learning

- Use of live tools as if 'on the job'
- Exposure to industry software
- Use as a decision-making tool to gain insights to make better decisions and recommendations





Cengage and Microsoft Partnership with Excel Online

Key Benefits:

- Seamless integration
- Time Savings
- Builds Workplace Skills



The owner of Showtime Movie Theaters, Inc., would like to predict weekly gross revenue as a function of advertising expenditures. Historical data for a sai the spreadsheet.

Due to a recent change by Microsoft you will need to open the XLMiner Analysis ToolPak add-in manually from the home ribbon. Screenshot of ToolPak



Open spreadsheet

a. Develop an estimated regression equation with the amount of television advertising as the independent variable (to 2 decimals).



b. Develop an estimated regression equation with both television advertising and newspaper advertising as the independent variables (to 2 decimals).

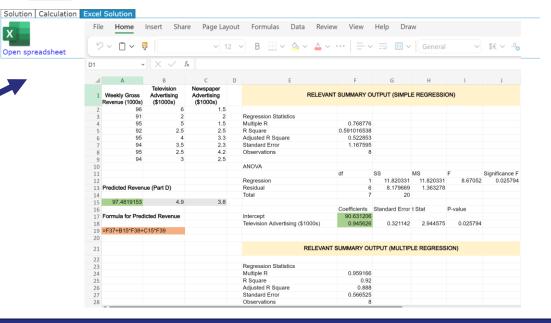


c. Is the estimated regression equation coefficient for television advertising expenditures the same in part (a) and in part (b)?



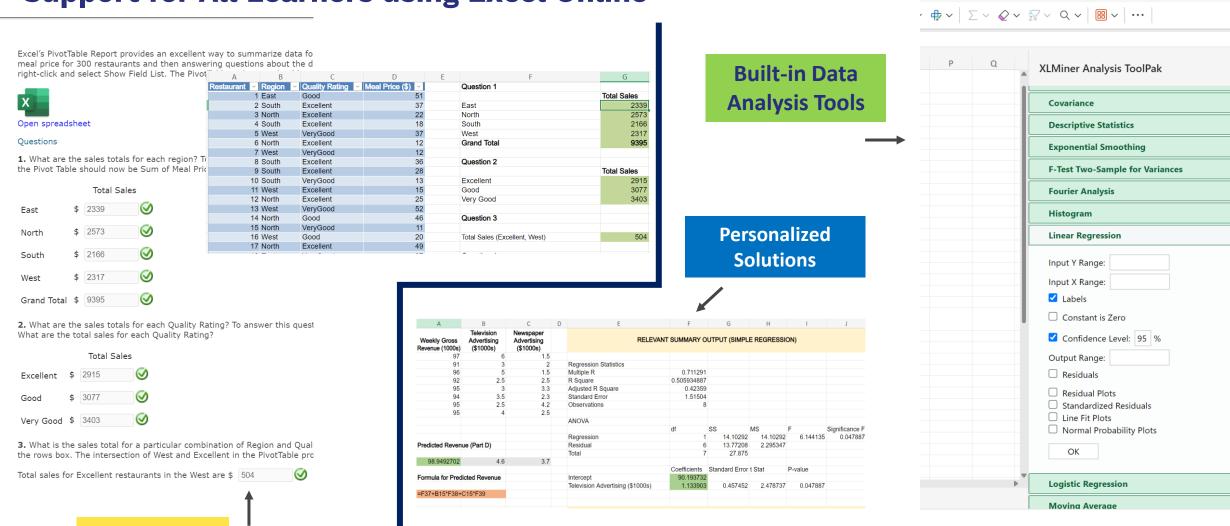
d. Predict weekly gross revenue for a week when \$4.9 thousand is spent on television advertising and \$3.8 thousand is spent on newspaper advertisin







Support for All Learners using Excel Online



Æ Editing ∨

Comments Comments



Tutorials

Analytical Thinking

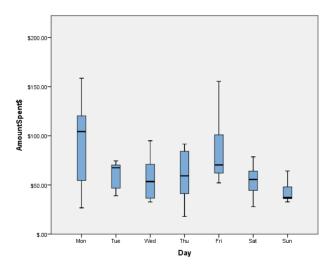
Heavenly Chocolates Website Transactions

Heavenly Chocolates manufactures and sells quality chocolate products at its plant and retail store located in Saratoga is your responsibility to review and analyze online sales data in order to help the firm make better decisions in the future sales even further.

To learn more about the website customers, you take a random sample of 50 online transactions over the previous mor on the website, the number of website pages visited, and the amount of time spent on the website for each of the 50 c

The company would like to determine if online shoppers who spend more time and view more pages also spend more n the week and the type of browser have on sales. You must use descriptive statistics and appropriate graphical displays

Using the series of box plots you generated below, you must now formulate a recommendation for the marketing depar



- O Since Saturday and Sunday have a wide distribution of sale amounts compared to other days, it may be best to offer a promotion that has
- O Since the lowest average sales figure is on Sunday at around \$40, the store should not sell any items under \$40.
- Target a special email promotion to arrive on Tuesday and Sunday mornings since sales are higher on those days.
- Target a special email promotion to arrive on Monday and Friday mornings since sales are higher on those two days.

Interpreting the Results
MindTap

Case Study: Cut-Rate Machining, Inc.

Jon Weideman, first shift foreman for Cut-Rate Machining, Inc., is attempting to decide on a vendor from valternatives to four vendors: The Hole-Maker, Inc. (HM); Shafts & Slips, Inc. (SS); Judge's Jigs (JJ); and Dachines of similar capabilities at similar prices, so the effectiveness of the machines is the only selection ship one machine to his Richmond, Indiana manufacturing facility for a test. He starts all four machines at to use any of the machines. After the warm-up period, one of his employees will use each of the shipped r centimeter-thick stainless-steel sheets for two hours. The widths of holes drilled with each machine are th data collection are shown in the given data.

Based on these results, from which vendor would you suggest Mr. Weideman purchase his new machine?

Managerial Report

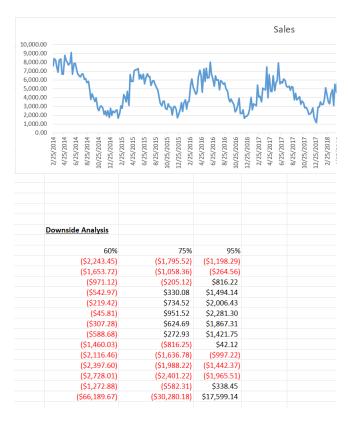
Use graphical methods of descriptive statistics to investigate the effectiveness of each vendor.

⊕ Given Data
The Hole-Maker, Inc.
→ Shafts & Slips, Inc.
Judge's Jigs
⊕ Drill-for-Bits
□ Vendor Recommendation
Use the above results to make a vendor recommendation to Mr. Weideman.
The most consistent hole diameters were achieved bySelect V Dudge's Jigs . However
Select V Pless than than the specified 3 cm. If the machine from this vendor could be recall

Case Studies in WebAssign

Financial Analytics Cases in MindTap

In this case, we have a flailing ice cream store that has seen significant sales declines throughout its life, and which is plagued by severe seasonality. Students are asked to do some basic analysis of cash flows and profitability to understand if it makes sense to keep operating the store or close it down.





Data Visualization and Storytelling

Exploring and Explaining with Data

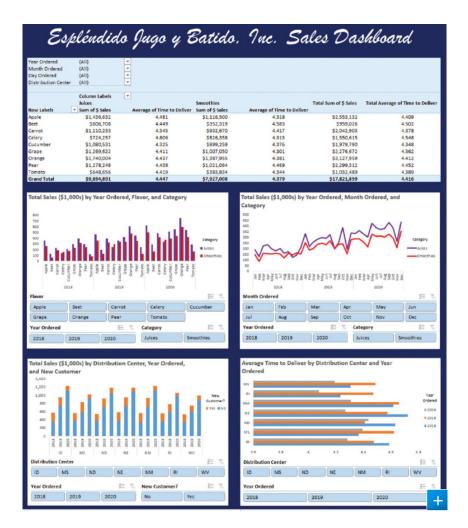
- Best practices for business students
- Data Visualization Makeovers
- No prerequisite stats knowledge

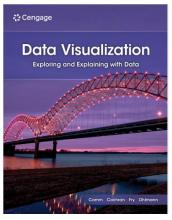
Topics

- Chart Selection
- Purposeful Use of Color
- Explaining Visually to Influence with Data
 - Know Your Audience, Storyboarding
- Data Dashboards

Problems

- Conceptual (Understand)
- Application (Create)
- Comprehensive Projects (Apply and Present)

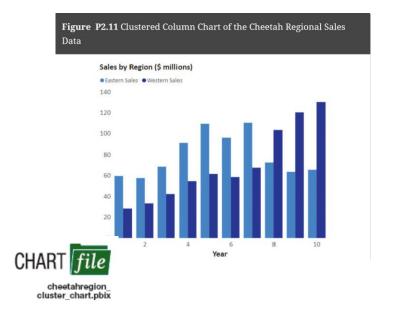


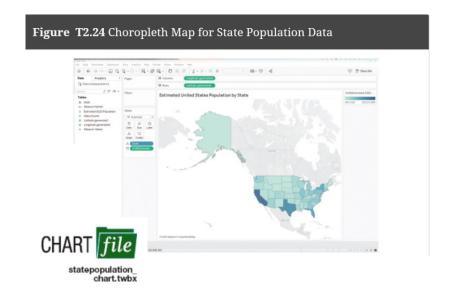




Industry Software Skills









Software coverage is driven by ease of student access, industry use, and pedagogical learning support.













Machine Learning in Analytics

Methods

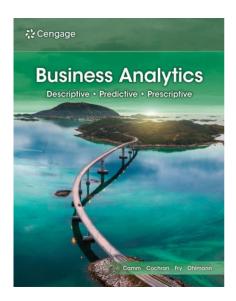
- Unsupervised Learning
 - Cluster Analysis
 - Text Mining
- Supervised Learning
 - Regression/Classification Tasks
 - Neural Networks

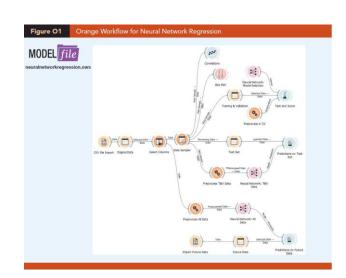
Concepts and Applications

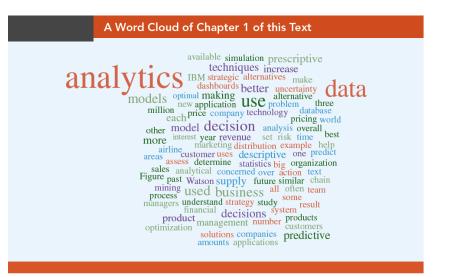
 Flexible for non-technical approach; applications dive into software/programming

Flexible Software Options

- R for programming skills.
- Python for programming skills.
- Orange for point-click software, Python-based GUI.







A word cloud that shows the frequency of words used in chapter 1 of **Business**Analytics.

Neural Network workflow using Widgets in *Orange*, a 'no code' package for machine learning techniques.



Artificial Intelligence

Artificial Intelligence

ANALYTICS IN ACTION

National Institute for Occupational Safety and Health

18-1 WHAT IS AI?

18-2 A BRIEF HISTORY OF AI

18-3 AI IN PRACTICE

18-4 LARGE LANGUAGE MODELS

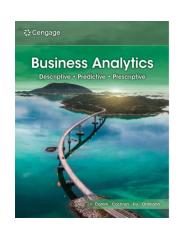
18-5 PROMPT ENGINEERING

18-6 ETHICAL CONCERNS RELATED TO AI

18-7 LEGAL CONSIDERATIONS RELATED TO AI

Gen Al Instructor Guides for Finance and Analytics in development for 2025-2026.

- 17. Study Prompts. Construct an AI study buddy. AI can be used to clarify areas of uncertainty and self-test specific topics. Experiment using the following prompts. LO 6
 - a. "I am struggling to understand the concept of algorithmic bias. Can you explain to me in terms that a 12-year old would understand what algorithmic bias is and provide some concrete examples of it?"
 - b. "Test me on my understanding of algorithmic bias. I'd like you to ask me three questions in succession. Wait for my answer on each and then assess my answer. Do not give me the answer, even if I ask. Instead, if I offer the wrong answer, please give me a hint. Start now with the first question."
- 18. Multimodal AI. Devise a prompt for AI to create a fantasy football logo for a team called the "Black Swans" using the themes from "black swan events" described by Nassib Talem's books titled "Fooled by Randomness" and "The Black Swan." Apply various prompting techniques and iteratively work with the AI until obtaining an image you find acceptable. LO 6
- 19. Role Prompting and Chaos Prompting. Devise a prompt for AI to consider alternative histories for how the world may be today if the Axis would have won World War II. Apply various techniques such as role prompting and chaos prompting. LO 6
- 20. Root Cause Problem-Solving with Prompting. Devise a prompt for AI to identify and categorize the root causes for the demise of BlackBerry Ltd. Based on the identified root causes, please create a table listing suggested solutions and rank each suggestion based on implementation difficulty on a scale from 1 to 5 (where 5 is the most difficult). Order the list, starting with the least difficult solutions to implement. LO 6





AI and Technology Applications in Business

Business Analytics

Artificial Intelligence and Machine Learning in Demand Forecasting

It is only a matter of time before artificial intelligence (AI) and machine learning (ML) find their way into the forecasting arena. Improvement using traditional forecasting techniques appear to have reached their limits. Basically, the essence of artificial intelligence is self-learning machines. Many organizations are now using machine learning in demand forecasting methods to see the future of sales. According to McKinsey & Company, reductions in forecasting errors of between 20 and 50 percent are feasible with AI. Other feasible improvements include reduction in lost sales due to out of stock products by up to 65 percent and inventory reductions of 20 to 50 percent.

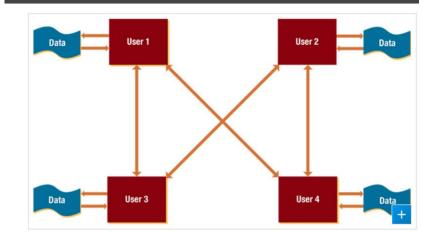
Supply Chain

Analytics in Action Advice from a Machine*

The proliferation of data and increase in computing power have sparked the development of automated *recommender systems*, which provide consumers with suggestions for movies, music, books, clothes, restaurants, dating, and whom to follow on social media platforms. The sophisticated, proprietary algorithms guiding recommender systems measure the degree of similarity between users or items to identify recommendations of potential interest to a user.

Fintech Applications

Exhibit 27.2 Decentralized Database System for Storing Financial Information



Currency focused on impact and applications of AI and technology in all courses.



Qualitative Business Courses: Top Priorities By Course

Instructors across all courses prefer Case Studies or Decision-making Activities that bridge theory with real-world application, foster critical thinking and practical decision-making.

Business Law

Real-World Relevance: Case studies are crucial for reflecting the legal realities students will face.

Deep Engagement: Case study activities are memorable and encourage deep, critical thinking.

Flexible and Practical: Case studies offer adaptability and allow students to apply legal concepts in realistic scenarios.

Intro to Business

- Decision-Making Essentials: Instructors emphasize the importance of students practicing real-world business decisions early on.
- Engaging and Practical: Simulations and case studies make complex concepts relatable and engaging for students.
- Comprehensive Learning: Activities are valued for promoting critical thinking and a well-rounded understanding of business.

Business Communication

- Skill Development: Activities are chosen for their ability to build essential communication and problem-solving skills.
- Realistic Prep: Simulations and role-plays mirror the communication challenges students will encounter in the workplace.
- Interactive Learning: Instructors value activities that engage students actively and offer flexibility across different scenarios.

Management

Practical Application: Instructors prioritize activities that bring real-life management scenarios into the classroom.

Interactive and Engaging: Simulations are highly regarded for fostering active participation and hands-on learning. Critical Thinking: Case studies and simulations help students develop the strategic thinking needed for real-world management.

Marketing

- Real-World Focus: Simulations and case studies are favored for integrating realworld marketing challenges into coursework.
- Hands-On Engagement: Interactive simulations empower students to make decisions and see their impact in a realistic setting.
- Holistic Coverage: Activities provide a broad, comprehensive learning experience, covering various aspects of marketing.

Cengage Management

Our Value Proposition

Cengage's Management portfolio excels in going beyond conceptual mastery by producing products that bolster student confidence in application and critical thinking. Our products engage students in authentic, intentional, and personalized learning activities matched to core course learning needs that promote students to **think and act like managers**.



Our Management Approach

Content:

- -Core theory: research & scientific study.
- -Up-to-date coverage: including changing work environments & communication patterns
- Real-world scenarios
- Hands-on activities

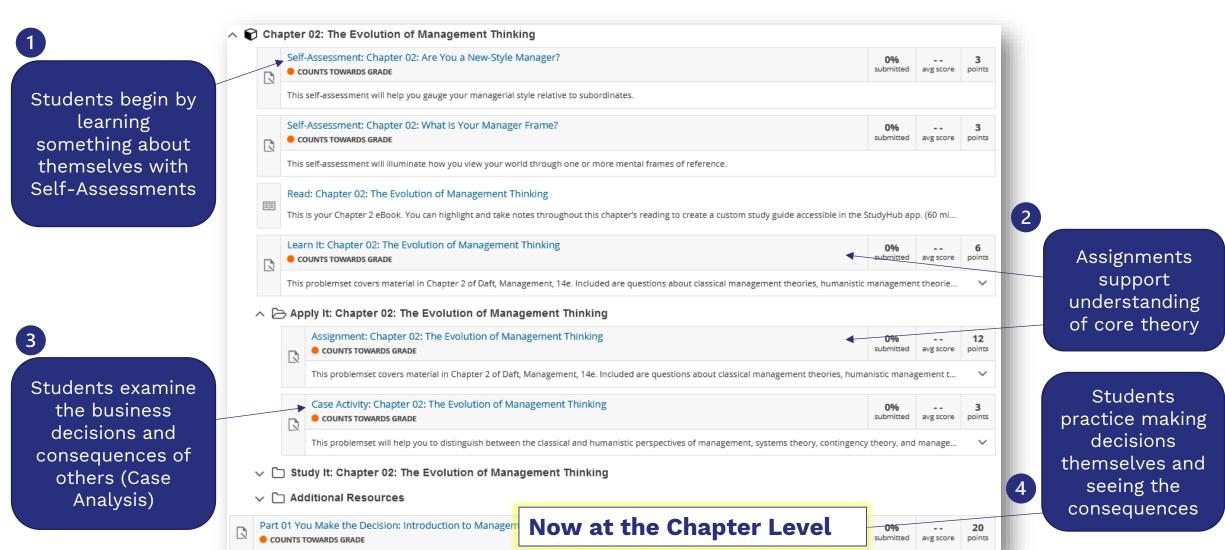
Technology:

- Self-Assessments
- Narrative Assessments/Quizzes
- Case Activities
- Decision-Making Activities

Practical skills for helping students learn to think, act, and making decisions like managers



MindTap Walks Students Through a Journey to Help Them Think and Act Like a Manager

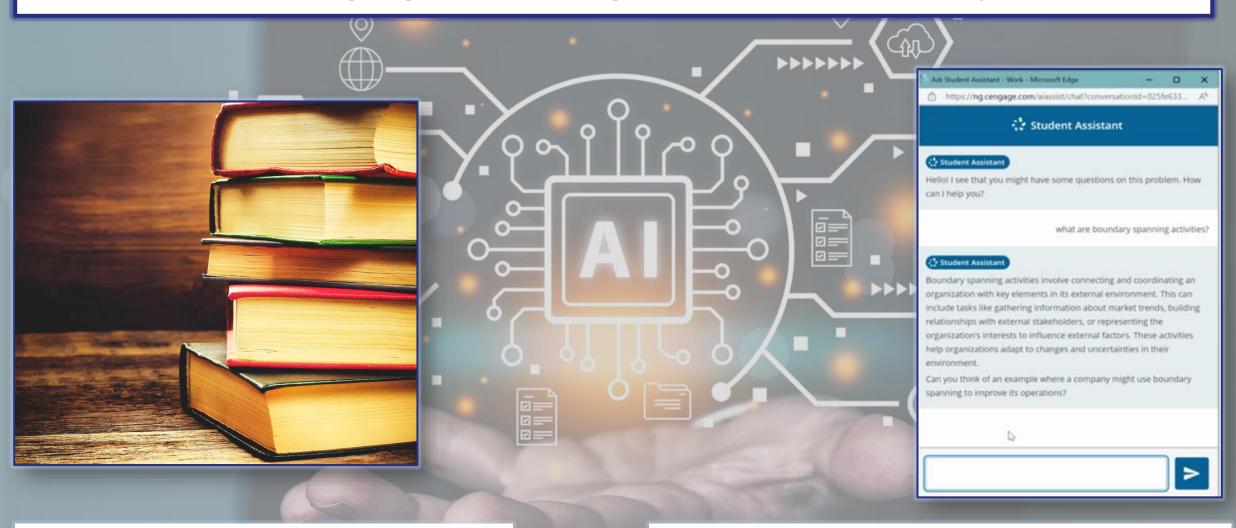


• Screenshot from Daft, Management MindTap

Chapter-Level You Make the Decision Simulations

Daft Chapter No.	Daft YMTDS Descriptive Title			
1	Adapting to Remote Work Challenges			
2	Enhancing Leadership for Hybrid Teams			
3	Leading Midsize Tech Amid Challenges			
4	Balancing Culture and Stability Abroad			
5	Implementing Environmental, Social, and Governance policies for Carbon Neutrality			
6	Balancing Impact and Profitability			
7	Refining Goals for Market Adaptation			
8	Revitalizing Acme Industries' Growth Strategy			
9	Improving Patient Satisfaction Amid Challenges			
10	Streamlining Operations for Scalable Growth			
11	Fostering Innovation Through Al Integration			
12	Measuring Human Capital for Competitive Advantage			
13	Increasing Diversity in Sustainable Farming			
14	Boosting Resilience and Employee Motivation			
15	Transforming Leadership for Inclusive Success			
16	Motivating Performance for Revenue Growth			
17	Enhancing Communication in Hybrid Work			
18	Overcoming Challenges in Team-Based Transition			
19	Aligning Performance in Rapid Growth			

Cengage Management Al Story



Role of AI in Management Narrative

To create better student user experience

Introducing the Student Assistant

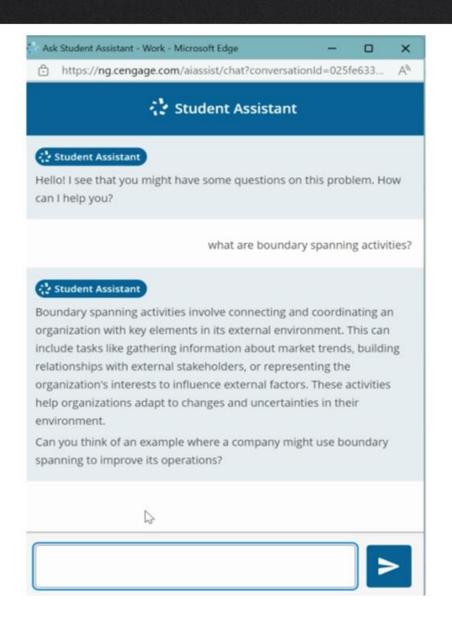
Seen as a tutor that's available 24/7 and offers just in time feedback and guidance that doesn't give away the answer to help keep students moving forward in their learning process.

Built to be:

- ☐ Reactive to learning needs
- ☐ Proactive in areas of struggle
- Concise and unbiased
- ☐ Helpful within limitations
- Neutral personality

Areas of focus:

- ☐ Offering examples
- ☐ Providing real time feedback
- Providing step by step guidance



CENGAGE Academic

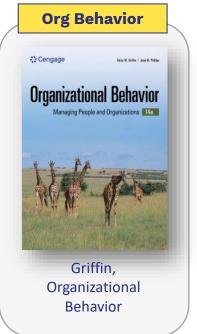
Student Assistant within A+ Test Prep expands to open access with 4 titles in Fall 2025

• Fall 2024 - Pilot



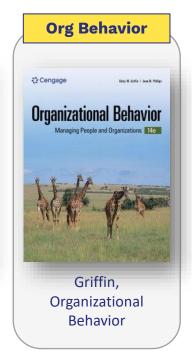
• Fall 2025 - Open Access

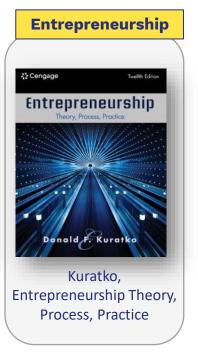










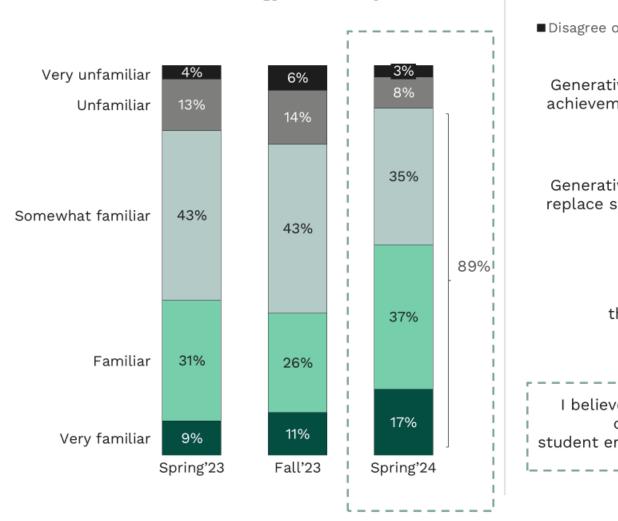


Al Narrative Text & Cases

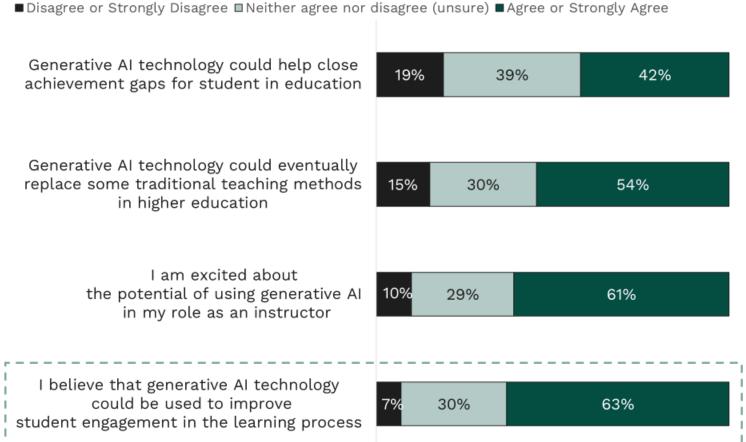
- Chapter 1, "Artificial Intelligence (AI): Transforming Management"
- Chapter 2, "Will AI Replace Millions of Workers? What Does History Tell Us?"
- Chapter 5, "AI: How Airbnb Uses AI for Decision Making"
- Chapter 7, "Insilico's Innovative Use of AI in Drug Development and Clinical Trial"
- Chapter 9, "Can Al Replace People in Fast Food Drive-Throughs?"
- Chapter 10, FROM CHAOS TO COLLABORATION: USE AI TO CREATE YOUR TEAM'S CHARTER
- Chapter 11, "Artificial Intelligence Transforming Human Resource Management"
- Chapter 13, "Can Al Motivate Employees?
- Chapter 15, "Three Ways AI Helps Doctors Communicate"
- . Chapter 16, "Regulation Costs: Can Al Make Recycling Affordable?"



Generative AI awareness and optimism are increasing among Instructors



Attitudes towards Generative AI technology



Generative AI technology familiarity

CENGAGE Academic

Spring'23 Instructor N = 598
Fall'23 Instructor N = 791
Sprin'24 Instructor N = 967

Q. What is your current level of familiarity with generative AI technology? (n=967)

Q. Please rate your level of agreement with the following statements about generative AI in higher education. (n=823)

Cengage Marketing:

Preparing Tomorrow's Marketing Leaders

Creating future marketers by...

- Connecting theory to practice
- Addressing soft skills gaps
- Developing (remote) presentation skills
- Harnessing AI for learning/feedback

Through...

- ✓ Integrating AI into narrative updates
- ✓ Expanding activities that develop decision making and critical thinking skills
- ✓ Focusing on real-world examples and experiences
- ✓ Leveraging AI technology



AI Content in All Principles of Marketing Titles

AI narrative and text cases - Pride/Ferrell Marketing 21e (CY25)

Chapter 3: The Impact of Technology

Chapter 5: Case 5.1. Picture Perfect: How Instagram Uses Big Data

Chapter 8: Case 8.1. Swimming in Management Consulting's Shark-Infested

Waters

Chapter 10: Promotion Considerations

Chapter 13: Marketing Insights Spotify Spots Product Opportunities Beyond

Streaming Services

Chapter 15: Retail Technologies

Chapter 17: Developing the Media Plan and Case 17.2. The Rise of Native

Advertising

Appendix B: Sample Marketing Plan

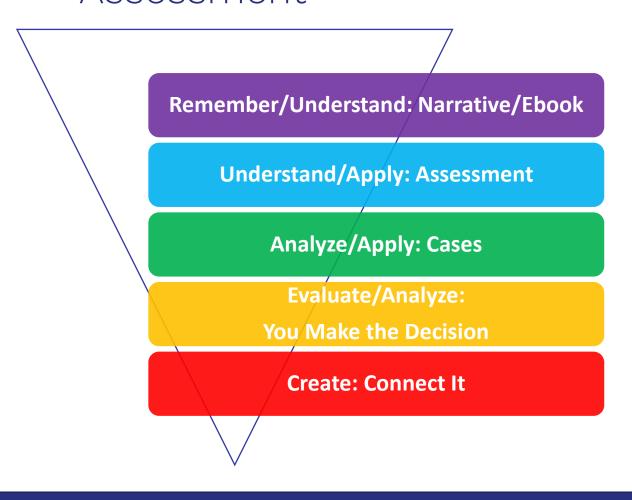
Appendix D: Marketing Analytics

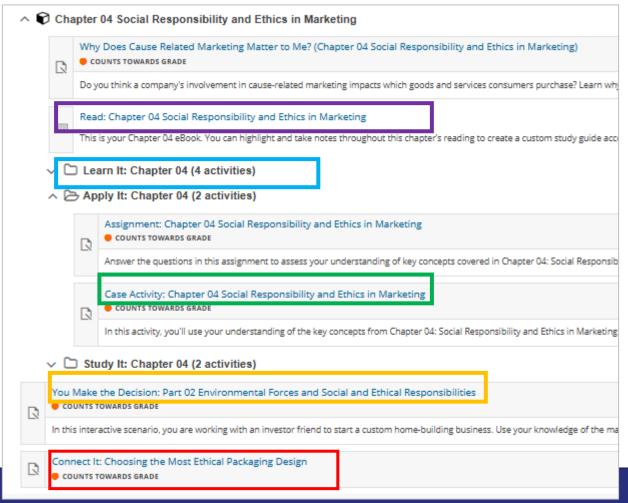


Cengage



Learning Path Approach: Structure, Pedagogy, and Assessment





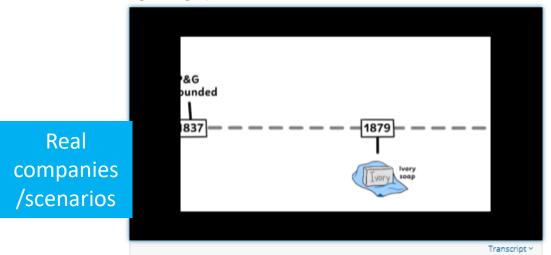


Connecting Theory to Practice

Chapter Cases

Case Activity: Procter & Gamble

Play the Procter & Gamble (P&G) video to learn more about how P&G has become one of the largest corporations creating a wide range of products for the home.



You Make the Decision Simulations

In this activity, you will become the marketer. You will be presented with a business scenario and then asked to make a series of decisions based on the information presented in the scenario and the information you've learned in the course. As you work through the activity, you'll see how your decisions impact your role as the marketer and the overall business.

Make your choices carefully as you will be scored based on how successful your decisions are. While each decision may present multiple viable options, one choice will lead to a more successful strategic outcome and earn you more points.

This activity is designed to build your critical thinking and problem-solving skills while also providing the opportunity to apply the concepts you've learned.

Play the video to start the activity. While watching the video, you'll be prompted to answer questions that are tied to the scenario and the concepts you've learned. After you've answered each question, you'll find out the impact that your decision had on your role as the marketer and on the business.



Dynamic, multi-step decision making experiences



Career Readiness Gaps

FIGURE 1: STUDENT AND EMPLOYER RATINGS OF IMPORTANCE OF AND STUDENT PROFICIENCY IN CAREER READINESS COMPETENCIES, BY PERCENT OF RESPONDENTS.

COMPETENCY	NEW GRADUATES		EMPLOYERS	
COMPETENCI	IMPORTANCE	PROFICIENCY	IMPORTANCE	PROFICIENCY
Communication	96.3%	78.1%	96.1%	53.5%
Critical Thinking	94.0%	80.8%	96.1%	55.9%
Teamwork	90.5%	83.5%	93.9%	81.5%
Career & Self-Development	87.8%	61.5%	65.6%	43.2%
Professionalism	88.9%	79.7%	89.4%	50.3%
Leadership	84.6%	66.0%	45.0%	31.0%
Technology	77.9%	60.5%	71.7%	72.0%
Equity & Inclusion	78.3%	79.5%	70.0%	63.3%

Biggest career readiness gaps in:

- Communication
- Critical Thinking
- Professionalism

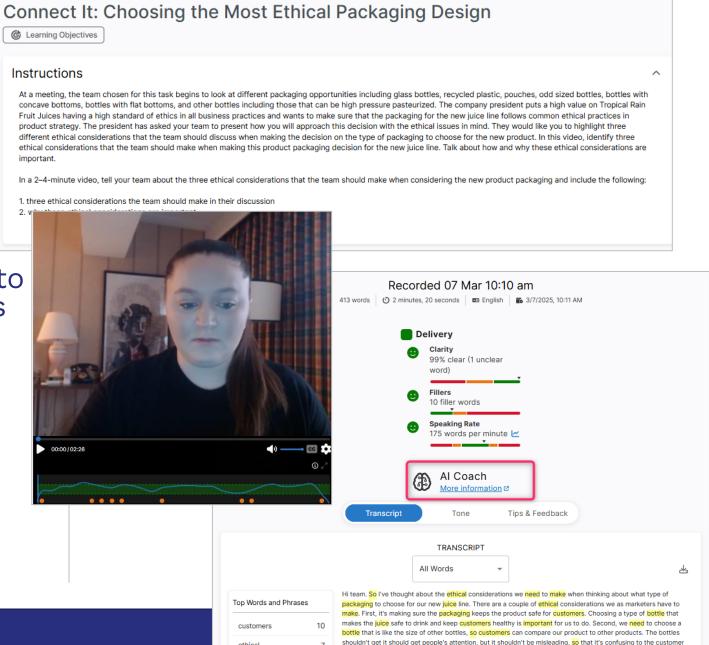
Source: National Association of Colleges and Employers. Data are from NACE's 2024 Student Survey and Job Outlook 2025 survey.



Career Readiness

NEW! Connect It Activities

- Help students connect theory to practice and develop soft skills
- Video Response activities
- Real, first year marketing scenarios
- Aligned with AACSB
- AI-powered student feedback and instructor grading support

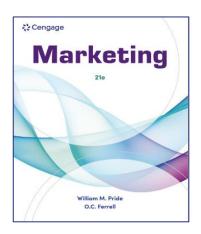


important

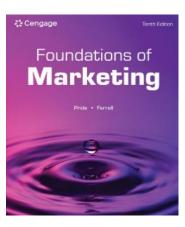
about what they are actually getting compared to other products. Third, we want to make sure the bottle is labeled correctly and has all the information a customer needs to make a good choice for them. Some companies mislabel

their packaging. This is a bad practice that our customers will not like. Like I said, choosing ethical packaging is

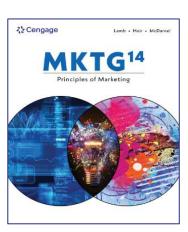




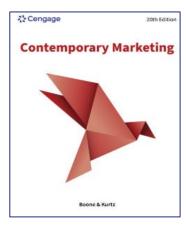
CY25



CY26



CY25*



CY26

Across Principles of Marketing:

Integrated AI narrative content
Cases
You Make the Decision simulations*
Connect It
Student Assistant

Preparing Students for Future Careers

Holistic Career Readiness

- Connecting foundational learning to application
- Layering opportunities to develop soft skills

Authentic Learning Experiences

- Hands-on experience with real-world software tools and company examples
- Developing employable skills

Innovative Content and Pedagogy

- Interactive and engaging content guided by learning science principles
- Integrating AI content and technology



Preparing Students for Future Careers

1)Analytics
2)Decision Making
3) AI
Cengage B&E Product

