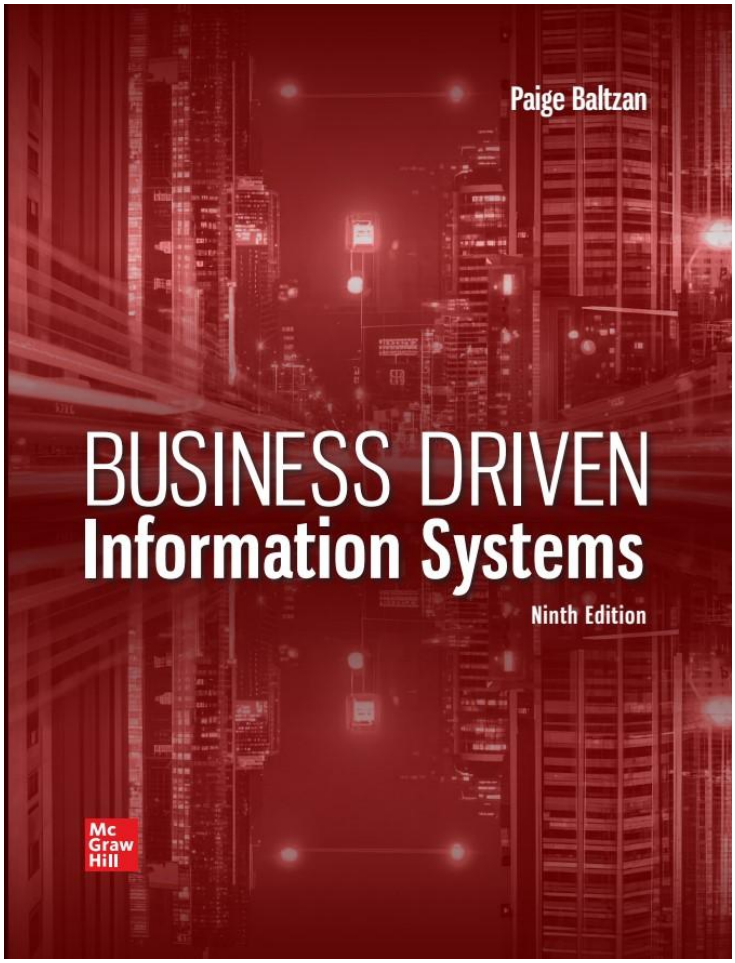
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BDIS 9E

INSTRUCTOR'S MANUAL

Paige Baltzan

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MANAGEMENT INFORMATION SYSTEMS: BUSINESS DRIVEN MIS

1 CHAPTER

This guide provides many classroom activities, videos, and debates to accompany BusinessDriven Information Systems. A few course suggestions:

- Create one or two test questions based on the classroom activity to help reward studentswho attend lectures.
- Many professors have found that assigning an activity and then lecturing on the materialhelps students gain a deeper understanding of the core MIS concepts as they have already struggled with applying the material to a real-world situation.
- Asking a small group of students to explain their answer to the activity to the entire class after completion ensures students come to class prepared. I select a different group eachactivity to explain their answer and they do not want to look unprepared in front of their fellow classmates. It is a powerful motivator to get my students reading prior to class. After the activity and student's presentations then I lecture – keeps my students engagedand helps to achieve a higher level of learning outcomes as they are constantly tasked with applying the concepts during class.
- Create an Ask the Professor Discussion board that runs the entire course where students can ask course and content related questions. I typically promise to respond within 24 hours, and I always encourage my students to check the discussion board before sendingan email. Many times, if one student a question so does other students.
- **Three Before Me Rule! This is something I have found that saves a great deal of time answering email. I state the Three Before Me rule in my syllabus. Before a student comes to me with a question, they must provide three sources they used to answer the question themselves. This significantly cuts down on emails as many times students canfind the answer to their questions, but it seems easier just to email the professor.
  Sources can include the syllabus, the Ask the Professor Q&A Discussion Board, classmates,the textbook, etc. If I ask the student for the three sources and they do not have them I dock participation points. Works great on significantly cutting down my emails and helps to prepare my students for the real world!
- The core chapter material is covered in detail in the PowerPoint slides. Each slide containsdetailed teaching notes including exercises, class activities, questions, and examples. Please review the PowerPoint slides for detailed notes on how to teach and enhance the core chapter material.

Enjoy your course and best of luck! Please feel free to email me directly if you have any questions, ideas, suggestions, or feedback! For additional course materials, content, and cases visit www.baltzan.net or email me directly at pbaltzan@baltzan.net.

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CHAPTER ONE

Information is everywhere. Information is a strategic asset. Without information, an organization simply could not operate. This chapter introduces students to several core business strategies that focus on using information to gain a competitive advantage, including:

- The core drivers of the information age
- Data, information, business intelligence, knowledge
- Systems thinking
- Competitive advantages
- SWOT analysis
- Porter's Five Forces model
- Porter's three generic strategies

Many of these concepts and strategies will be new to your students. Be sure to explain to your students that this chapter offers an introduction to these concepts, and they will gain asolid understanding of the details of these concepts as they continue reading the text.

SECTION 1.1 – BUSINESS DRIVEN MIS

- Competing in the Information Age
- The Challenge of Department Companies and the MIS Solution

SECTION 1.2 – BUSINESS STRATEGY

- Identifying Competitive Advantages
- SWOT analysis
- The Five Forces Model – Evaluating Industry Attractiveness
- The Three Generic Strategies – Choosing a Business Focus

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SECTION 1.1
BUSINESS DRIVEN MIS

This chapter provides an overview of *Business Driven Information Systems (BDIS)* along with anticipated learning objectives for students. Explain to your students that the goal of this chapter is to get them excited about BDIS and all the different business and technology concepts they are going to learn. Let your students know that they are going to be introduced to many new concepts that they might be unfamiliar with; however, these concepts are discussed in detail throughout the text.

LEARNING OUTCOMES

Learning Outcome 1.1: Describe the information age and the differences between data, information, business intelligence, and knowledge.

We live in the information age, when infinite quantities of facts are widely available to anyone who can use a computer. The core drivers of the information age include data, information, business intelligence, and knowledge. Data are raw facts that describe the characteristics of an event or object. Information is data converted into a meaningful and useful context. Business intelligence (BI) is information collected from multiple sources such as suppliers, customers, competitors, partners, and industries that analyzes patterns, trends, and relationships for strategic decision making. Knowledge includes the skills, experience, and expertise, coupled with information and intelligence that creates a person's intellectual resources. As you move from data to knowledge you include more and more variables for analysis resulting in better, more precise support for decision making and problem solving.

Learning Outcome 1.2: Explain systems thinking and how management information systems enable business communications.

A system is a collection of parts that link to achieve a common purpose. Systems thinking is a way of monitoring the entire system by viewing multiple inputs being processed or transformed to produce outputs while continuously gathering feedback on each part. Feedback is information that returns to its original transmitter (input, transform, or output) and modifies the transmitter's actions. Feedback helps the system maintain stability. Management information systems (MIS) is a business function, like accounting and human resources, which moves information about people, products, and processes across the company to facilitate decision making and problem solving. MIS incorporates systems thinking

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to help companies operate cross-functionally. For example, to fulfill product orders, an MIS for sales moves a single customer order across all functional areas including sales, order fulfillment, shipping, billing, and finally customer service. Although different functional areas handle different parts of the sale, thanks to MIS, the customer the sale is one continuous process.

CORE MATERIAL

The core chapter material is covered in detail in the PowerPoint slides. Each slide contains detailed teaching notes including exercises, class activities, questions, and examples. Please review the **INSTRUCTOR** PowerPoint slides for detailed notes on how to teach and enhance the core chapter material. For additional course materials, content, and cases visit www.baltzan.net or email me directly at pbaltzan@baltzan.net.

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SECTION 1.2
BUSINESS STRATEGY

This section discusses how an organization can identify competitive advantages using tools such as Porter's Five Forces, three generic strategies, and value chains. Gaining competitive advantages is critical for organizations. Organizations also must understand that competitive advantages are typically temporary since competitors are quick to copy competitive advantages. For example:

- United was the first airline to offer a competitive advantage with its frequent flyer mileage (this first-mover advantage was temporary)
- Sony had a competitive advantage with its portable stereo systems (this first-mover advantage was temporary)
- Microsoft had a competitive advantage with its unique Windows operating system
- Ask your students if Microsoft still has a competitive advantage with its Windows operating system
  - Ans: Perhaps – primarily due to its first-mover advantage since it is difficult to switch operating systems and users face interoperability issues if they are using different operating systems at the same organization.
  - How many students in your class are currently using Windows?
  - What are the competitors to Windows? Ans: Macintosh
  - Why are there only three primary competitors (Microsoft, Macintosh, and Linux) in this large operating system market?

LEARNING OUTCOMES

Learning Outcome 1.3: Explain why competitive advantages are temporary.

A competitive advantage is a feature of a product or service on which customers place a greater value than they do on similar offerings from competitors. Competitive advantages provide the same product or service either at a lower price or with additional value that can fetch premium prices. Unfortunately, competitive advantages are typically temporary, because competitors often quickly seek ways to duplicate them. In turn, organizations must develop a strategy based on a new competitive advantage. Ways that companies duplicate competitive advantages include acquiring new technology, copying business processes, and hiring away employees.

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Learning Outcome 1.4: Identify the four key areas of a SWOT analysis
A SWOT analysis evaluates an organization's strengths, weaknesses, opportunities, and threats to identify significant influences that work for or against business strategies. Strengths and weaknesses originate inside an organization or internally. Opportunities and threats originate outside an organization or externally and cannot always be anticipated or controlled.

Learning Outcome 1.5: Describe Porter's Five Forces Model and explain each of the five forces.
Porter's Five Forces Model analyzes the competitive forces within the environment in which a company operates, to assess the potential for profitability in an industry.

- Buyer power is the ability of buyers to affect the price they must pay for an item.
- Supplier power is the suppliers' ability to influence the prices they charge for supplies (including materials, labor, and services).
- Threat of substitute products or services is high when there are many alternatives to a product or service and low when there are few alternatives from which to choose
- Threat of new entrants is high when it is easy for new competitors to enter a market and low when there are significant entry barriers to entering a market
- Rivalry among existing competitors is high when competition is fierce in a market and low when competition is more complacent

Learning Outcome 1.6: Compare Porter's three generic strategies.
Organizations typically follow one of Porter's three generic strategies when entering a new market: (1) broad cost leadership, (2) broad differentiation, (3) focused strategy. Broad strategies reach a large market segment. Focused strategies target a niche market. Focused strategies concentrate on either cost leadership or differentiation.

CORE MATERIAL

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CHAPTER ONE
CLOSING MATERIAL

REVIEW QUESTIONS

1. **What is data and why is it important to a business?**
   Data are raw facts that describe the characteristics of an event or object. Before the information age, managers manually collected and analyzed data, a time-consuming and complicated task without which they would have little insight into how to run their business.

2. **How can a manager turn data into information?**
   Information is data converted into a meaningful and useful context. Having the right information at the right moment in time can be worth a fortune. Having the wrong information at the right moment; or the right information at the wrong moment can be disastrous.

3. **What is the relationship between data, information, business intelligence, and knowledge?**
   Data is converted into information, business intelligence, and knowledge. Using data, information, business intelligence, and knowledge to make decisions and solve problems is the key to finding success in business. These core drivers of the information age are the building blocks of business systems.

4. **Why is it important for a company to operate cross-functionally?**
   Each department performs its own activities. Although each department has its own focus and data, none can work independently if the company is to operate. It is easy to see how a business decision made by one department can affect other departments. Marketing needs to analyze production and sales data to come up with product promotions and advertising strategies. Production needs to understand sales forecasts to determine the company's manufacturing needs. Sales needs to rely on information from operations to understand inventory, place orders, and forecast consumer demand. All departments need to understand the accounting and finance departments' information for budgeting. For the firm to be successful, all departments must work together as a single unit sharing common information and not operate independently

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or in a silo.

5. **Why would a company want to have a CIO, CPO, and CSO?**
   A chief information officer is responsible for (1) overseeing all uses of MIS and (2) ensuring that MIS strategically aligns with business goals and objectives. A chief privacy officer is responsible for ensuring the ethical and legal use of information within a company. A chief security officer is responsible for ensuring the security of business systems and developing strategies and safeguards against attacks by hackers and viruses. Companies need to ensure they have all the appropriate executives to ensure they are meeting the goals and needs of the business.

6. **What role does MIS play in business?**
   Management information systems (MIS) is a business function, like accounting and human resources, which moves information about people, products, and processes across the company to facilitate decision making and problem solving. MIS incorporates systems thinking to help companies operate cross-functionally. For example, to fulfill product orders, an MIS for sales moves a single customer order across all functional areas including sales, order fulfillment, shipping, billing, and finally customer service.
   Although different functional areas handle different parts of the sale, thanks to MIS, to the customer the sale is one continuous process. If one part of the company is experiencing problems, however, then, like the car without a steering wheel, the entire system fails. If order fulfillment packages the wrong product, it will not matter that shipping, billing, and customer service did their jobs right, since the customer will not be satisfied when he or she opens the package.

7. **Do you agree that MIS is essential for businesses operating in the information age? Why or why not?**
   MIS can be an important enabler of business success and innovation. This is not to say that MIS equals business success and innovation, or that MIS represents business success and innovation. MIS is a tool that is most valuable when it leverages the talents of people who know how to use it and manage it effectively. To perform the MIS function effectively, all companies, particularly large and medium-sized ones, have an internal MIS department, often called information technology (IT), information systems (IS), or management information systems (MIS). For the purpose of this text, we will refer to it as MIS.

8. **Why is it important for a business major to understand MIS?**
   MIS systems drive organizations, and all business students will be using MIS systems toperform their jobs. Without adequate knowledge of MIS business students will be unprepared to compete in the information age.

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9. **What type of career are you planning to pursue? How will your specific career use data, information, business intelligence, and knowledge?**
Answers to this question will vary depending on the career path the student has chosen.

10. **How does systems thinking support business operations?**
Systems thinking is a way of monitoring the entire system by viewing multiple inputs being processed or transformed to produce outputs while continuously gathering feedback on each part. Feedback is information that returns to its original transmitter (input, transform, or output) and modifies the transmitter's actions. Feedback helps the system maintain stability. For example, a car's system continuously monitors the fuel level and turns on a warning light if the gas level is too low. Systems thinking provides an end-to-end view of how operations work together to create a product or service. Business students who understand systems thinking are valuable resources because they can implement solutions that consider the entire process, not just a single component.

11. **What business strategies would you use if you were developing a competitive advantage for a company?**
Answers can include SWOT analysis, Porter's five forces, Porter's three generic strategies, or value chain analysis.

12. **How can Porter's Five Forces Model help with decision making?**
Formally defined, Porter's Five Forces Model analyzes the competitive forces within the environment in which a company operates to assess the potential for profitability in an industry. Its purpose is to combat these competitive forces by identifying opportunities, competitive advantages, and competitive intelligence. If the forces are strong, they increase competition; if the forces are weak, they decrease competition.

13. **How could a company use loyalty programs to influence buyer power? How could a company use switching costs to lock in customers and suppliers?**
Companies can also reduce buyer power with loyalty programs, which reward customers based on their spending. The airline industry is famous for its frequent-flyer programs, for instance. Because of the rewards travelers receive (free airline tickets, upgrades, or hotel stays), they are more likely to be loyal to or give most of their business to a single company. Keeping track of the activities and accounts of many thousands or millions of customers covered by loyalty programs is not practical without large-scale business systems, however. Loyalty programs are thus a good example of using MIS to reduce buyer power.

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One way to reduce buyer power is by manipulating switching costs, costs that make customers reluctant to switch to another product or service. Switching costs include financial as well as intangible values. The cost of switching doctors, for instance, includes the powerful intangible components of having to build relationships with the new doctor and nurses, as well as transferring all your medical history. With MIS, however, patients can store their medical records on DVDs or thumb drives, allowing easy transferability. The Internet also lets patients review websites for physician referrals, which takes some of the fear out of trying someone new

14. What are Porter's three generic strategies and why would a company want to follow only one?

Porter has identified three generic business strategies for entering a new market: (1) broad cost leadership, (2) broad differentiation, and (3) focused strategy. Broad strategies reach a large market segment, while focused strategies target a niche or unique market with either cost leadership or differentiation. Trying to be all things to all people is a recipe for disaster, since doing so makes it difficult to project a consistent image to the entire marketplace. For this reason, Porter suggests adopting only one of the three generic strategies.

15. What is the purpose of having a business model and operating model?

A business model is a plan that details how a company creates, delivers, and captures value to generate revenues. An operating model is a detailed plan describing how a business delivers its value creation to its internal and external customers via its business processes. Without a correlation between your business model and your operating model you would be unable to deliver the value required to generate revenues.

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CLOSING CASE ONE QUESTIONS
Data Analytics Careers: Top Skills For Your Future

1. **Pick one of the jobs eliminated due to technological innovations and explain which technology caused the job to disappear and what has replaced the job.**
   Numerous jobs have been eliminated due to technological innovations. For example, the advent of automation and robotics in manufacturing has replaced many manual labor jobs, such as assembly line workers, with machines capable of repetitive tasks. Similarly, advancements in artificial intelligence and machine learning have impacted industries like data entry and basic customer service, as chatbots and data processing software can now perform these tasks more efficiently. Additionally, the rise of e-commerce and online shopping has reduced the demand for traditional retail jobs in brick-and-mortar stores, as consumers increasingly prefer digital platforms. However, it's worth noting that while technology may eliminate certain jobs, it often creates new opportunities in fields like software development, data analysis, and digital marketing, reflecting the dynamic nature of the job market in response to technological advancements.

2. **Pick one of the jobs created by technology innovations and identify the college major required to participate in the industry.**
   One job created by technological innovations is "Data Scientist," which involves extracting valuable insights from large datasets to inform decision-making. To participate in this industry, a college major in "Data Science," "Computer Science," "Statistics," "Mathematics," or a related field is typically required. These majors equip individuals with the necessary skills in programming, statistics, machine learning, and data analysis to excel in the role of a data scientist, which is in high demand across various industries due to the growing importance of data-driven decision-making.

3. **Demonstrate how analysts can transform data into information and business intelligence for one of the above newly created jobs.**
   When discussing MIS, it is important to understand the difference between data and information
   - Ask your students to look around the classroom and identify 3 pieces of data and 3 pieces of information
   - This is a bit of a trick question, unless you know the system you are building or the problem you are trying to solve it is impossible to know what data is and what is information
   - For example, if you were building a system to track students:
   - Data might include height, name, and hair color
   - Information might include student to professor ratio, percentage of marketing majors who are female, number of students who pass the course.
   - If you were building a system to track inventory:
   - Data might include chair manufacturer, chair color, and chair size
   - Information might include number of chairs required for students in each class, average number of chairs needed to be replaced each semester.

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4. **Explain how Porter's Five Forces analysis could have predicted the job elimination due to technology.**
   A Porter's Five Forces analysis could have predicted job elimination due to technology by examining the competitive dynamics within an industry. Firstly, the threat of new entrants might have indicated the potential for technology companies to disrupt traditional industries, such as manufacturing or retail, with automation and innovation, leading to job losses. Secondly, the bargaining power of suppliers and buyers could have highlighted how technology providers or consumers might influence labor practices, potentially accelerating job displacement through automation or cost-cutting measures. Thirdly, the intensity of rivalry within an industry could have suggested that companies would increasingly turn to technology to gain a competitive edge, leading to job losses as they adopt automation and streamline operations. Finally, the threat of substitutes might have indicated that technology-based solutions could replace traditional labor-intensive processes, further predicting job elimination. Overall, a Porter's Five Forces analysis could have provided valuable insights into the potential impact of technology on job displacement within specific industries.

5. **Pick one of the jobs created by technological innovation and create Porter's three generic strategy for the industry?**

   One job created by technology innovation is "Digital Marketing Specialist." In this industry, the three generic strategies inspired by Porter's model could be:

   - **Cost Leadership:** Digital marketing agencies could strive to become the most cost-efficient providers in the market by adopting automation tools and optimizing advertising campaigns, allowing them to offer competitive pricing to clients while maintaining profitability.
   - **Differentiation:** Some digital marketing firms may focus on differentiation by offering unique and highly specialized services such as advanced data analytics, AI-driven targeting, or creative content production, distinguishing themselves from competitors and catering to clients with specific needs.
   - **Focus:** A subset of digital marketing agencies may adopt a focused strategy, targeting a niche market segment or specific industry where they can excel. By becoming experts in a particular field, they can provide specialized solutions that address the unique challenges and opportunities of their chosen market, commanding premium prices for their expertise.

CLOSING CASE TWO
The Internet of Things

1. **Explain the Internet of Things and list three IoT devices. Also, list three IoT devices you are currently using in your own life.**
   The Internet of Things (IoT) refers to the network of physical objects or "things" embedded with sensors, software, and connectivity capabilities, allowing them to collect and exchange data with other devices and systems over the internet. IoT devices enable automation, monitoring, and control of various aspects of our lives, from smart homes to industrial processes. Here are three examples of IoT devices:

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- **Smart Thermostat:** Devices like the Nest Thermostat can connect to the internet, learn your heating and cooling preferences, and adjust the temperature in your home accordingly for energy efficiency and comfort.

- **Smart Speaker**: Products like Amazon Echo or Google Home are voice-activated IoT devices that can perform tasks like playing music, answering questions, and controlling other smart home devices.

- **Fitness Tracker:** Wearable devices like Fitbit or Apple Watch collect data on your physical activity, heart rate, and sleep patterns, which can be synced with your smartphone or computer for health monitoring.

2. **Explain why it is important for business managers to understand that data collection rates from IoT devices is increasing exponentially.**
   If your students are wondering why they need to take this course, then this case study should scare them into becoming a believer in the power of technology in business. Managers of the future are going to be tasked with analyzing terabytes of data right on their desk – something new to industry. With M2M data managers are going to have access to incredible amounts of business intelligence – if they know how to handle it.

3. **Demonstrate how data from an IoT device can be transformed into information and business intelligence.**
   We live in the information age, when infinite quantities of facts are widely available to anyone who can use a computer. The core drivers of the information age include data, information, business intelligence, and knowledge. Data are raw facts that describe the characteristics of an event or object. Information is data converted into a meaningful and useful context. Business intelligence (BI) is information collected from multiple sources such as suppliers, customers, competitors, partners, and industries that analyzes patterns, trends, and relationships for strategic decision making. Knowledge includes the skills, experience, and expertise, coupled with information and intelligence that creates a person's intellectual resources. As you move from data to knowledge you include more and more variables for analysis resulting in better, more precise support for decision making and problem solving

4. **Propose a plan for how a start-up company can use IoT device data to make better business decisions.**
   Students should be able to discuss how a company can use Porter's Five Forces to analyze an industry to determine how attractive it would be to enter. Once determining if it would be profitable to enter a certain industry the company would need to determine which of Porter's three generic strategies it should follow to ensure success. Once the company is up-and-running it can use Porter's value chain analysis to examine and redefine its business processes to ensure it is operating as efficiently and effectively as possible.

   IoT devices can be used in any of these areas to track data on correct functioning, usage, malfunctions, locations, patterns, and activity. All of these will provide tremendous insight into how the market is using the device and how the market views the device. Hopefully,

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these are in line with corporate strategy.

5. **Argue for or against the following statement: "The Internet of Thingsis just a passing fad and will be gone within a decade."**
   For this debate the important point is that your students can justify their point of view. Some students will agree, and others will disagree. The important part of the debate is their justification of how they view IoT.

BUSINESS DRIVEN DECISIONS

Instructor Note: There are few right or wrong answers in the business world. There are only efficient and inefficient, and effective and ineffective business decisions. If there were always right answers businesses would never fail. These questions were created to challenge your students to apply the materials they have learned to real business situations. For this reason, the authors cannot provide you with one version of a correct answer. When grading your students' answers, be sure to focus on their justification or support for their specific answers. A good way to grade these questions is to compare your student's answers against each other.

1. **WORKING FOR THE BEST**
   The goal of higher education is to arm our students with the types of skills required to start an amazing fulfilling career. Looking at current top companies can help students understand early the skills they require to be competitive. What skill will they receive from this course that they can put on their resume or LinkedIn account? This activity is a great eye-opener for students skeptical of taking this course.

   Ask your students to find a list of the top companies to work for in the current year according to Fortune magazine. Data items could include:
   - Perks
   - Benefits
   - Location
   - Turnover
   - Profitability
   - Employee trust
   - Layoff history

   If the data analyzed by Fortune was inaccurate the listing would be inaccurate and readers and subscribers to Fortune would lose faith in the company and discontinuing reading the magazine. Students analyzing this list can gain insight into the types of companies they might want to work for upon graduation. Potential questions students can answer by analyzing this list include:
   - Which industry has the greatest number of Fortune 100 top companies to work for?
   - Which industry has the least number of Fortune 100 top companies to work for?
   - What are the top five locations for Fortune 100 companies?
   - What are the bottom five locations for Fortune 100 companies?
   - What types of perks and benefits do top companies offer?
   - How many of the Fortune 100 companies are currently hiring?

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2. VIEW FROM A FLAT WORLD

This question makes for a great classroom debate. Student answers will vary as they dig into the pros and cons of how technology has made physical location less of a challenge. Hopefully, everyone immediately recognizes the importance of this course as they watched the Friedman video. As you begin to compete in a Flat World you need all the technology skills and experience you can possibly find! I've never heard anyone say - "My career was right on track until I learned about technology - I sure wish I had never learned technology it ruined my career".

- Amazon is a book selling company - not a technology company.
- Netflix is a video rental business - not a technology company.
- eBay is a consumer trading business - not a technology company.

All these businesses were started by BUSINESS people who understood the value of technology so well that they fundamentally changed the primary business processes of buying books, renting videos, and trading goods. Every BUSINESS person should understand technology, without it they won't be able to spot the competitive advantages that are just waiting for the next brilliant entrepreneur to discover.

There are huge strides in third world countries. We now have Internet carts that can drive around and provide remote villages in Neap and India and Africa with computers and access. Some argue that the world between the haves and the have-nots is widening because of technology - I personally believe it is closing. With a computer I can literally get a PHD from an online school no matter where I am located - a remote village in Antarctica.

Here is a question for your students. Is the world flat for everyone? When I view Friedman and try to think of a job that isn't flat, I tend to come up with blue collar jobs. White collar jobs are easily outsourced - CPAs are doing our taxes in China, Legal work is done is Africa, Architecture work is done in India, Programming code is done is Ukraine, Doctors are reading our x-rays in India, etc. But can a nurse, garbage man, house painter, contractor, waitress, librarian, (service industry) jobs be outsourced? Don't get me wrong - I completely agree that the best thing you can invest in is your education - but in a flat world I no longer agree that it means your skill set won't be outsourced.

3. DO YOU TRUST YOUR DATA?

Why do you believe data can be inaccurate?

There are numerous reasons why data is inaccurate. In fact, it is estimated that over 80 percent of spreadsheets have errors. Error upon entering data is a key issue and here are a few problems:

- **Errors in Inputting Data:** Amongst the most typical data entry problems is inputting the incorrect data. An unintentional mistype can lead to short or even long-term troubles. It may also result in incorrect records, wrong information, and disorganization. It is specifically prevalent in cases of human data entry processes. Sadly, even the top-notch data entry specialists tend to make mistakes that can cost heavily to a business. Addition or subtraction of a number or putting in the decimal point at a wrong place is a small error that may cost your company a great deal of money.

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- **Incorrect Data Formatting:** Even the most-advanced data entry software applications can create issues for a business. Inaccurate formatting is a typical concern, which can lead to correct data getting inputted in the wrong columns. Just imagine the date 2/5/2025. Depending on the country you are in that could be February 2 or January 5.
- **Human Errors:** Like data inputting concerns that are elaborated above, there exist a lot of issues that revolved around basic human errors. Issues concerning your employees like tiredness, the pace at which data is entered, emotional aspects, time management, and diversions can adversely impact the way in which the data is being entered. Likewise, people can misjudge data as they may preview one aspect of information in the wrong way as their brain interprets it.
- **Misspelling of names or other important information "**Tyron Rodney Jur" instead of "Tyron Rodney Jr"
- **Wrong date format while entering data in Excel**
- **Data misinterpretation:** Replacing the letter "O" with the number zero
- **Missing values**
- **Entering data in the wrong field**

What can a business do to ensure data is correct? What can be done to reduce these errors?

- **Stringent quality checks** – Double-checking the data entered helps in reducing errors and eliminates the need for re-entering the data. Regular checks will also help identify areas of improvement.
- **Train employees** – Make sure to train them on the importance of the data they are handling and let them know the consequences of compromising any data. Ask them to focus more on accuracy than on speed.
- **Provide enough time and allow breaks** – Even if your operators have good data entry skills and expertise, there are always chances of mistakes when they are loaded with a bunch of tasks. Provide a comfortable working environment and offer them regular breaks to refresh and reset before they return to work.
- **Update automated systems** – If your firm relies on automated tools such as Intelligent Character Recognition (ICR) and Optical Character Recognition (OCR) technology for data collection or analysis, make sure to update those systems regularly. Also, protect automated systems against viruses and malware or it may result in errors.
- **Find the source of data inaccuracy –** Check the data entry errors that occurred, statistics, and patterns to determine the primary internal and external sources of data inaccuracy. This helps to make necessary changes to both the processes as well as management techniques.
- **Consider outsourcing** – Outsourcing data entry and management tasks to an experienced data entry company will help businesses get the accurate data they are looking for, along with reduced operational costs, effective data management and secured processing.

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Explain how bad data will impact information, business intelligence, and knowledge.
If you are making decisions on bad data changes are good that you will make a bad decision. Garbage In is Garbage Out is a classic statement in the MIS field. If the data being entered is incorrect then it will be incorrect as it is turned into information, business intelligence, and knowledge. Managers are only as good as the data they must make decisions. Wrong data, wrong decision.

Have you ever made a decision on bad data? If so, be sure to share it with your peers and explain how you could have verified the data quality.
This is a great group activity as many students have personal examples. These examples will help students immediately see the value in this course as they learn how to navigate the data minefields laid all over organizations today.

Argue for or against the following statement: "It is better to make a business decision with bad data than with no data"
This question works perfect for an online discussion board debate. Student answers to this question will vary. Bad data can be much worse than no data at all. While the lack of data on a given subject can be troubling, it doesn't carry with it the potential pitfalls that can accompany the accumulation of bad data.

- Bad Data Means Bad Decisions
- Bad Data Means Ruined Reputations
- Bad Data Wastes Money

4. SYSTEMS THINKING

This is a great activity to get your students thinking about business process and how IoT and M2M are going to digitize business. Depending on your school registration process the answers to this question will vary. This is typically a source of frustration for students and will be a great classroom exercise as they begin to design the course registration process of the future.

5. MANIPULATING DATA TO FIND YOUR VERSION OF THE TRUTH

This is a great project to help your students understand the problems associated with interpreting data. Many students will be unfamiliar with data and how they are going to interact with corporate data, customer data, competitor data, market data, etc. Economists use all kinds of data including GDP, inflation, housing sales, taxes, exchange rates, currency, etc.

6. INFORMATION ISSUES IN THE INFORMATION AGE

The types of information stored on a thumb drive could include student age, student birthdate, student address, student phone, student contact, student major, student classes, student loans, student social security number, student license plate, student work history, student grades and degree. Losing this information could put every student at risk of identity theft. The school should have a policy that student data cannot be stored on personal devices!

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7. 10 BEST THINGS YOU WILL SAY TO YOUR GRANDCHILDREN

Your students may find different answer then the following depending on their familiarity with technology.

1. Refers to using Twitter
2. Refers to global warming and the loss of snow
3. Refers to Jeopardy and other game shows based on a person's own memory
4. Refers to movie theaters before on-demand and Netflix downloads
5. Refers to social networking profiles
6. Refers to globalization
7. Refers to vitamins
8. Refers to cloud computing
9. Refers to iPhone updates
10. Refers to cloning animals

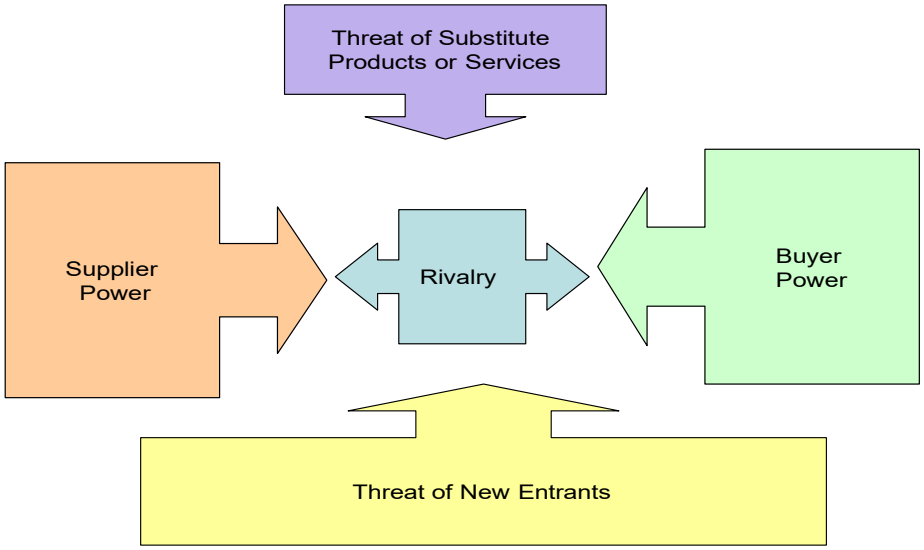
8. SHARING DATA AROUND THE WORLD

- List five types of sensitive data your school collects on students, faculty, and personnel. Social security numbers, student numbers, birth dates, spouses, dependents, pay rates, salaries, grades, etc.
- Review the list of stakeholders working at and with your school. Determine which types of sensitive data each has access to and whether you have any concerns about sharing this data. This is a great question as many people have access to student data including faculty, coaches, tutors, administrators. I was shocked to find out how many people can access student faculty data. Your students might be concerned when they find out human resources can sleuth through data.
- Do you have to worry about theft of your sensitive student data? How can you ensure your school does not have any data leakage problems? This should be the biggest concern from your students as data hacks on campus occur all the time and hackers actually target networks with .edu as they know students are not yet bankrupt and they can steal their identities easily as they are not yet tracking their credit.

9. DEATH OF A PRODUCT

Answer to this question will vary – below is a template for your students to use as they analyze their products.

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10. UPWARD MANAGE YOUR BOSS

Student answers to this question will vary. It is a great idea to break your students into their prospective majors and create the presentation based on what they believe data will look like and what types of decisions they will be making. For example: Account/Finance: Monetary, Expenses, Sales, Interest Rates to create reports on expansion, growth, future employment needs, etc.

11. COMPETITIVE ANALYSIS

Organizations must formulate a strategy for entering new markets. An organization can follow Porter's three generic strategies when entering a new market: (1) broad cost leadership, (2) broad differentiation, or (3) a focused strategy. Broad strategies reach a large market segment, while focused strategies target a niche market. A focused strategy concentrates on either cost leadership or differentiation. Trying to be all things to all people, however, is a recipe for disaster, since it is difficult to project a consistent image to the entire marketplace. Porter suggests that an organization is wise to adopt only one of the three generic strategies.

To illustrate the use of the three generic strategies, consider the figure in the question. The matrix shown demonstrates the relationships among strategies (cost leadership versus differentiation) and market segmentation (broad versus focused).

- Hyundai is following a broad cost leadership strategy. Hyundai offers low-cost vehicles, in each model stratification, that appeal to a large audience.
- Audi is pursuing a broad differentiation strategy with its Quattro models available at several price points. Audi's differentiation is safety, and it prices its various Quattro models (higher than Hyundai) to reach a large, stratified audience.

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- Kia has a more focused cost leadership strategy. Kia mainly offers low-cost vehicles in the lower levels of model stratification.

Hummer offers the most focused differentiation strategy of any in the industry (including Mercedes-Benz). Student solutions to this project will vary. The most important part of their answer is their justification for each product placement.

12. SMART CARTING

Target, or a similar retail company, can benefit from using the IoT device designed for shopping carts or baskets in several ways:

- **Optimizing Store Layout:** By analyzing the store navigation patterns collected by the IoT device, Target can gain insights into how customers move through the store. This information can help them optimize store layouts, product placements, and aisle designs to enhance the shopping experience and increase sales.

- **Inventory Management:** Analyzing products placed and removed from carts provides real-time inventory data. Target can use this information to improve stock management, ensuring that popular items are well-stocked and reducing the risk of out-of-stock situations.

- **Personalized Marketing**: Data from the IoT device can enable Target to understand individual shopping habits. By tracking product interactions, they can offer personalized product recommendations, discounts, or promotions to customers, increasing the likelihood of upselling and cross-selling.

- **Price Optimization:** Analyzing the correlation between time spent in the store and the total purchase amount can help Target optimize pricing strategies. For instance, if longer shopping trips correlate with higher spending, Target might incentivize customers to spend more time in-store.

- **Operational Efficiency:** Target can improve staff scheduling and allocation by understanding peak shopping times and areas of the store with the highest foot traffic. This ensures that they have sufficient personnel available when and where they are needed.

- **Loss Prevention:** The device can also help identify potential theft or suspicious activities, enhancing security and loss prevention measures.

As for purchasing the IoT device, if I owned a store, I would certainly consider it, as it offers valuable insights to enhance customer experience, increase sales, and optimize operations. However, privacy concerns and data security would need to be addressed to ensure compliance with regulations and maintain customer trust. It's essential to use this technology responsibly and

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transparently while protecting customer data.

13. COMPUTERS ARE EVERYWHERE?

Five years ago, some IoT devices that were not widely available but are commonly used today include:

- **Smart Speakers:** Devices like Amazon Echo and Google Home have become ubiquitous, providing voice-activated assistance and controlling smart home devices.
- **Smartwatches:** Advanced smartwatches, such as the Apple Watch, have gained popularity, offering fitness tracking, health monitoring, and smartphone integration.
- **Connected Thermostats:** IoT-enabled thermostats like the Nest Learning Thermostat have become popular for energy efficiency and remote temperature control.

14. DOES DATA LIE?

This is such a splendid example of identical data being deployed in diverse ways due to analysis. Who it right and who is wrong truly depends on how you look at the data – and more likely who you are when you are looking at the data. Your students will enjoy analyzing these two different reports from the exact same dataset.

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TECHNOLOGY PLUG-IN T1
PERSONAL PRODUCTIVITY USING IT

LEARNING OUTCOMES

1. **Describe the four steps you can use to create a strong password.**
   - **Create strong passwords that you can remember**. A strong password is one that is at least eight characters, includes a combination of letters, numbers, and symbols and is easy for you to remember, but difficult for others to guess. The easiest way to create a strong password that you will not have to write down is to come up with a *passphrase*.
   - **Keep your passwords a secret**.
   - **Manage your passwords.** A strong password is one you change every few months.
   - **Monitor your accounts**.

2. **Identify three tips you can use to manage your files.**
   - Use My Documents
   - Limit file name lengths
   - Archive completed work
   - Use shortcuts instead of multiple copies
   - Use abbreviations
   - Use thumbnails
   - Do not save unnecessary work.

3. **Explain why you would use Microsoft's backup and recovery utility.**
   The Backup Utility in Windows helps protect data if a hard disk fails or files are accidentally erased due to hardware or storage media failure. The Recovery Console is used to perform many tasks without starting Windows, including starting and stopping services, reading and writing information on a local disk drive, and formatting drives.

4. **Describe the six common e-mail mistakes.**
   - Failing to follow e-mail etiquette
   - Attempting anonymity
   - Sending e-mail to the wrong person
   - Using one e-mail address for everything
   - Clicking send to fast
   - Forgetting the attachment

5. **Explain spam and phishing and identify three ways that you can prevent each.**
   Spam is received junk e-mail. Tips to stop spam include:
   - Delete junk e-mail messages without opening them.
   - Do not reply to spam.

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- Think twice before opening attachments.
- Do not buy anything through spam.
- Do not forward chain e-mail messages.

Phishing is a type of deception designed to steal your identity. In phishing scams, scam artists try to get you to disclose valuable personal data, such as credit card numbers, passwords, account data, or other information, by convincing you to provide it under false pretenses. Tips to stop phishing include:

- Report suspicious e-mail.
- Be wary of clicking on links in e-mail.
- Type addresses directly into your browser or use personal bookmarks.
- Check the security certificate when you are entering personal or financial information into a Web site.
- Do not enter personal or financial information into pop-up windows.

6. **Explain the primary uses of spyware and adware.**
   Spyware is a general term used for software that performs certain behaviors such as advertising, collecting personal information, or changing the configuration of your computer, generally without appropriately obtaining your consent. Spyware is often associated with software that displays advertisements (called **adware**) or software that tracks personal or sensitive information.

7. **Identify three things you can do to maintain your computer and keep it running smoothly.**
   - Free disk space.
   - Speed up access to data.
   - Detect and repair disk errors.

8. **Explain why you would install anti-virus protection software.**
   Anti-virus (AV) is a term applied to either a single program or a collection of programs that protect a computer system from viruses. Anti-virus software is designed to keep your PC free of computer viruses and worms. It does so by scanning your PC's file system looking for known viruses; if a virus is found, the software will inform you and then take steps to remove the virus threat.

9. **Describe the need for a personal firewall.**
   A **firewall** is simply a program or hardware device that filters the information coming through the Internet connection into a computer. If an incoming packet of information is flagged by the filters, it is not allowed through.

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CLASSROOM EXERCISE

Cell Phones, Spam, Phishing, and Viruses
As next-generation cell phones grow in popularity and function more like PCs, digital intruders are targeting them with viruses, spam and phishing schemes. There are several mobile phone viruses at the moment.

When you contemplate the possibilities, it gets pretty scary. The number of computer users who are already targets of virus infections pales in comparison to the number of mobile phone users out there.

Ask students…

1. How many use Bluetooth?
2. How many check for cell phone security updates?
3. How many install some type of security software on their phone?

EXTENDING THE CORE MATERIAL

Google puts up 'Beware of malware' signs
Google warns people when search results could potentially lead them to malicious code. People who attempt to go to a Web site that has been identified as risky by the coalition are taken to a warning page.

> "Warning--the site you are about to visit may harm your computer!" the page states in bold type, then suggesting users can "learn more about malware and how to protect yourself at StopBadware.org."

The interrupt page suggests that users can try returning to the search page and choosing a different result, trying another search or they can continue to the potentially malicious site.

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