Introduction to Information Systems

Data Science Education Program

Chapter #5

Information systems for the enterprise

CHAPTER

5 Information Systems for the *Enterprise*

LEARNING OBJECTIVES

1. Explain the role that financial and asset management information systems play in an organization, and the importance of financial reporting.
2. Define human capital management, identify its major components, and describe several metrics used to quantify aspects of human capital.
3. Define supply chain management, and describe the metrics, technologies, and information systems that support supply chain processes.
4. Define customer relationship management and its role in an organization, and describe the metrics and information systems that support it.
5. Explain the importance of ERP systems and describe how they are created, integrated, and implemented.

An online, interactive decision-making simulation that reinforces chapter contents and uses key terms in context can be found in MyMISLab™.

Key Terms and Concepts

KEY TERMS AND CONCEPTS

financial management system

eXtensible Business Reporting Language (XBRL)

human capital management (HCM)

human resources management (HRM) system

workforce management module

talent management

supply chain management (SCM)

visibility

demand forecast accuracy (DFA)

bullwhip effect

electronic data interchange (EDI)

global positioning systems (GPS)

customer relationship management (CRM)

sentiment analysis

web beacon or web bug

enterprise resource planning (ERP)

middleware

MyMISLab | Online Simulation

Custom Cakes

A Role-Playing Simulation on Enterprise Information Systems and the Supply Chain

Introduction

Introduction

- Management in a broad and diverse range of organisations demands that records are retained for:
  - Tracking transactions, income, employees, customers, suppliers, taxation, assets, and many more data and information systems requirements
- The records:
  - Also form the data repository needed to generate the reports for stakeholders (internal and external)
- Information systems:
  - To support most common business processes are widely available, even for start-ups
  - This chapter considers such systems and the business processes they support with the value they provide

Management Information Systems

- The major information systems for operations management are:
  - *Finance* and *asset* management
  - Human capital management
  - *Supply chain* management
  - *Customer relationship management* (CRM)
  - Figure 5.1. provides a brief overview of these IT systems and information systems

FIGURE 5-1
Major information systems for managing operations.

Business Process	Sample Functionality for Information System
Finance and Asset Management	Accounts payable, accounts receivable, general ledger, inventory, procurement
Human Capital Management	Human resources management, payroll, benefits, time sheets, talent development, training programs
Supply Chain Management	Supply chain planning software, warehouse management, transportation management
Customer Relationship Management	Contact management, marketing campaign management, email marketing, sales force management, customer service

Major Subject Areas

- The major subject areas covered in Chapter #5 are:
  - *Finance* management:
    - Components of financial information systems
    - Financial reporting compliance and transparency
  - *Human capital* management:
    - Components of human capital management systems
    - HCM metrics
    - The ethical factor: ethics and talent management
  - Managing the *supply chain*:
    - Supply chain fundamentals
    - Measuring performance in supply chains
    - Information systems and technologies for supply chain management

Major Subject Areas

- The major subject and topic areas covered in Chapter #5 are:
  - *Customer relationship management* (CRM):
    - CRM goals and metrics
    - CRM strategies and technologies
  - *Enterprise resource planning* (ERP): bringing it all together:
    - ERP components
    - Implementation issues

Finance management

Typical Components of Financial Information Systems

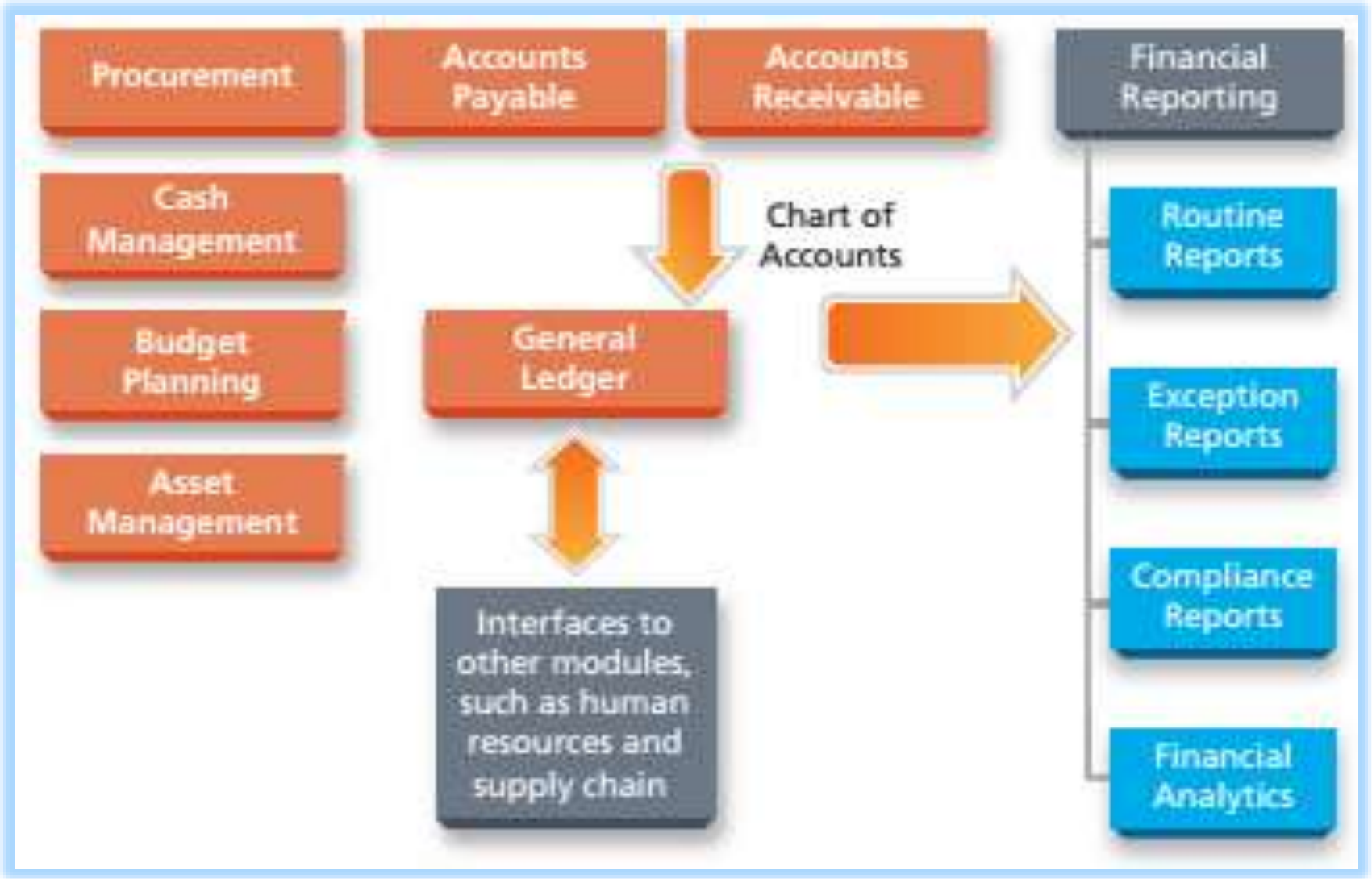


FIGURE 5-2
Sample components for a finance management system.

Integrating the Components

- It is important to avoid inconsistencies and duplication:
- For example:
  - Accounts must be reconciled
  - Bridges and interfaces to other systems include:
    - *Human resources*
    - *Salaries*
  - Time periods must be the same
  - Data definitions must match between components

Financial Workflows

- Integration of financial components supports the development of paperless workflows in organizations
- For example:
  - *Accounts*
  - *Purchase ordering*
  - *Sales management*
- Software can build on-line interactive integrated forms to enable:
  - *Processes checking*
  - *Corrections* to documents and files
- Figure 5.3: shows a typical workflow example

Typical Financial Workflow Example

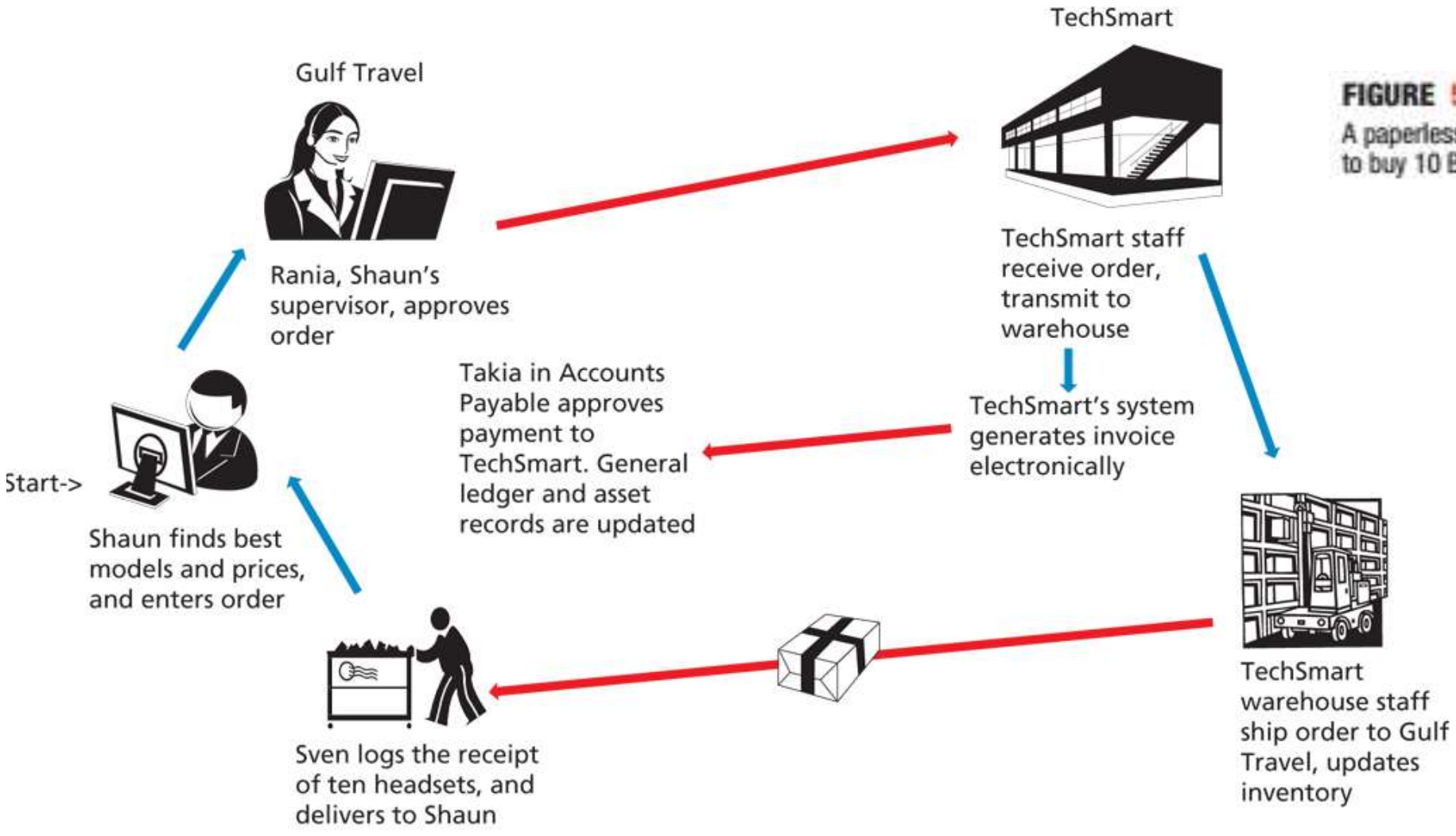


FIGURE 5-3
A paperless workflow in procurement to buy 10 Bluetooth headsets.

Financial Reporting

- Financial reporting, compliance, and transparency are important considerations:
  - Exception reporting
  - Compliance reporting
  - The *eXtensible Business Reporting Language* (XBRL) is a component in the *XML* technology standard
- The aim of XBRL is an improvement in transparency (for example):
  - There are agreed commonly accepted international standard for reporting corporate performance and accounts (***however***)
  - There are also many countries do not comply with the standard

XBRL

- The *e**X**tensible* Business *R**eporting* *L**anguage* (XBRL)
  - Is a *mandatory* system reporting system
  - XBRL is required in the USA by the Securities and Exchange Commission (SEC)
  - XBRL is used for compliance and electronic reporting of financial results
- The important aspects of XBRL are:
  - Data exchange using common (*XML* – based) *naming conventions*
  - Reduces the reliance on paper reporting
  - Enables effective data analysis of corporate accounts for different organisations and industries

Exception Reporting

- Consider exception reporting:
  - Financial systems generate exception reports automatically
  - The reports identify and tag unusual events and potential fraud
- It is interesting to note:
  - Organizations lose large sums in fraudulent transactions
  - Banks lose hundreds of millions (£ / $ / etc) but do not generally report the losses (fear of losing customer confidence in their security levels)
  - A large proportion of fraud is carried out by employees
  - Companies (e.g., banks) adopt systems to limit employee fraud

Compliance Reporting

- Financial systems carry the role of ensuring compliance
- Compliance reporting may cover:
  - *Local* compliance
  - *National* compliance
  - *International* compliance
- Regulatory and statutory compliance has become increasingly important globally:
  - Organizations have received large financial penalties for breaches of financial rules
  - Companies must report data breaches (failure to do so results in large fines)

Improving Transparency

- Data must be both machine readable and human readable
  - This reduces human input and improves data processing accuracy and speed
- The *International Accounting Standards Board* (IASB)
  - Promotes a set of common international accounting standards
  - Financial reporting improves the capability to compare financial results nationally and internationally
- However: as with XBRL standard:
  - There remain differences between different countries which fail to comply with the standard(s)

Human capital management

Human Capital Management (HCM)

- The term *human capital* represents the *employees* in an *organisation*
- The components of human capital management (HCM) systems are:
  - Human resources management (HRM) systems
  - Workforce management
  - Talent management
- A further component is social networking and HCM:
  - HCM covers all activities and information systems that support effective management of an organization's human capital

HCM Systems Components

FIGURE 5-4
Components of human capital management systems.

HCM Module	Description
Core human resources management application	Demographic information, human resources management, payroll, benefits, professional development, education
Workforce management applications	Time and attendance, sick and vacation leave, task and activity tracking, labor scheduling capabilities
Talent management applications	E-recruitment and position applications, employee performance management and tracking, career development, compensation management, e-learning and professional development tracking; visualization and organizational charts
Service delivery applications	Employee and managerial self-service, typically web-based, for entering data and retrieving reports
Social software	Wikis, blogs, social networks

Human Resources Management

- Traditionally termed ‘Personnel’ HRM systems are typically central to the HCM system
- The functions include tracking:
  - Demographic information and dependents (e.g., family emergency contacts)
  - Salaries and tax data
  - Benefits
  - Employment history including starting and termination days and information
  - Performance evaluations with professional development information and training data

Workforce Management

- Traditional HRM systems have grown into larger software systems that support employee related functions
- For example – the workforce management module:
  - Uses core HRM data and records to track:
    - Time of attendance and shift working
    - Sick leave and holidays
    - Project management
- Workforce management can also manage:
  - Staffing and work schedules
  - Managing peak demand periods using sales records to adjust staffing levels

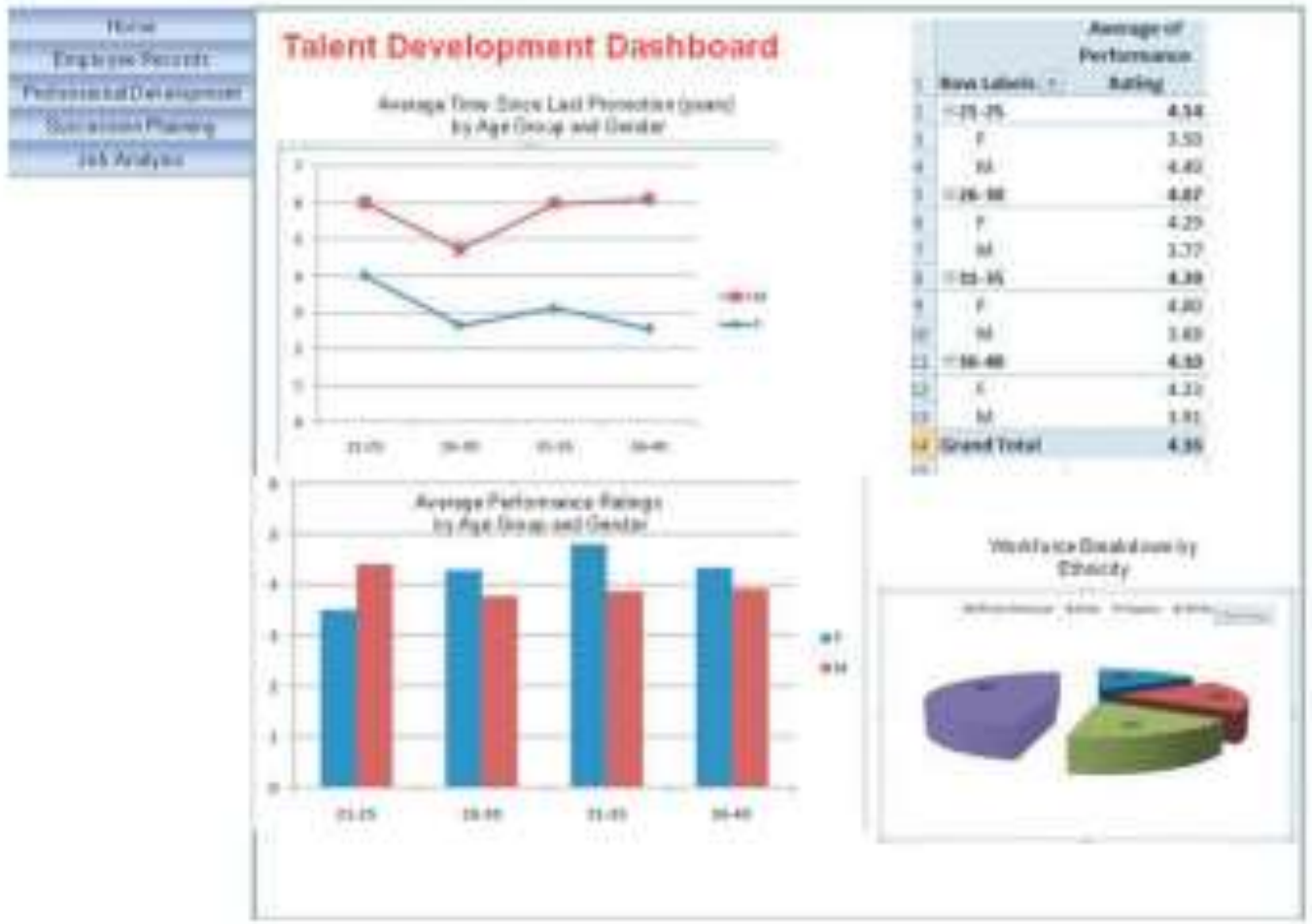
Talent Management

- Talent management applications include:
  - Focus on employee life cycles
  - Beginning with recruitment
  - Extending to performance evaluation and career development
  - Compensation (salary) planning
  - E-learning
  - Succession planning following retirement(s) with knowledge retention
- Visualization and charting tools add richness to how mangers:
  - Succession planning
  - Reach decisions (decision-support)

Talent Management

FIGURE 5-5

Talent management applications include visualization and charting tools to display key metrics for human resource professionals.



Social Networking and HCM

- There is a trend to include social networking systems in HCM
- Social networking:
  - May be used to monitor employee activity
  - Promote the organization's policies and activities
- An interesting development is to use social networks to:
  - Create 'social' alumni
  - Instigate mentoring of current employees by retired employees
  - Inform staff of new job opportunities

Human Capital Metrics

- HCM systems hold a wealth of data
- Such data may provide intelligence for the following questions:
  - Do we have the talent we need to succeed in the future?
  - Can we manage the departure of a ‘star’ employee in marketing? (succession planning and knowledge / experience retention)
  - Are training expenses growing so much because turnover is too high?
  - How productive are our full-time employees compared to part-time employees?
- HCM systems:
  - Introduce data that can improve decision-making and related strategies

Human Capital Metrics

Human Capital Metric	Description
Turnover	The percentage of workers who left and were replaced during a time period
Turnover costs	The total of termination costs, hiring costs, training costs, and other costs related to replacing a worker
Cost per hire	Average advertising costs + agency fees + recruiter's salary and benefits + relocation expenses for new employees
Human capital return on investment	The return on investment produced by the organization's expenditures on salaries, benefits, bonuses, and other costs for human talent
Employee satisfaction	Measures of job satisfaction, usually assessed through employee surveys or exit interviews

FIGURE 5-6
Metrics drawn from the human capital management system can reveal important information about how well the organization is managing human capital.

Ethics and Talent Management

THE ETHICAL FACTOR Ethics and Talent Management

Scenario: The CEO of a large media company with more than 10,000 employees decides to buy out a small business that created a spectacularly successful online role-playing game. The smaller company has about 50 software engineers, and the CEO wants to retain about 20 top performers. The rest will be laid off. The CEO can't obtain performance ratings for the 50 engineers at the online game company, so instead the CEO asks the human resources director to analyze the performance metrics of software engineers at the media company. The CEO's goal is to identify common characteristics of star software engineers to help guide the decision about who should be retained. With the new talent management system, the director can quickly analyze average ratings by job position, years of experience, age, gender, ethnicity, educational background, university attended, marital status, and many more variables.

Suppose the graphs show that, within the media company, average performance ratings are slightly higher for male software engineers under 35 years old compared to women of all ages, as well as men over age 35.

Relying on this information to decide who in the game company should get job offers to stay on would not only be unethical, but it could also lead to poor decisions. For instance, the results could stem from past and present discrimination at the media company against people who don't fit a stereotype about software engineers. Human resource professionals need sharp critical thinking skills and thoughtful decision making to use these powerful systems ethically and wisely.

Managing the supply chain

Managing the Supply Chain

- The primary objectives of supply chain management are:
  - The optimization of the flow of products or services from the source to the customer
  - To align supply and demand (the *Bullwhip* effect – see Figure 5.9)
- Supply chain management (SCM) entails a number of considerations and components:
  - Supply chain fundamentals
  - Measuring performance in supply chains
  - Information systems and technology for supply chain management

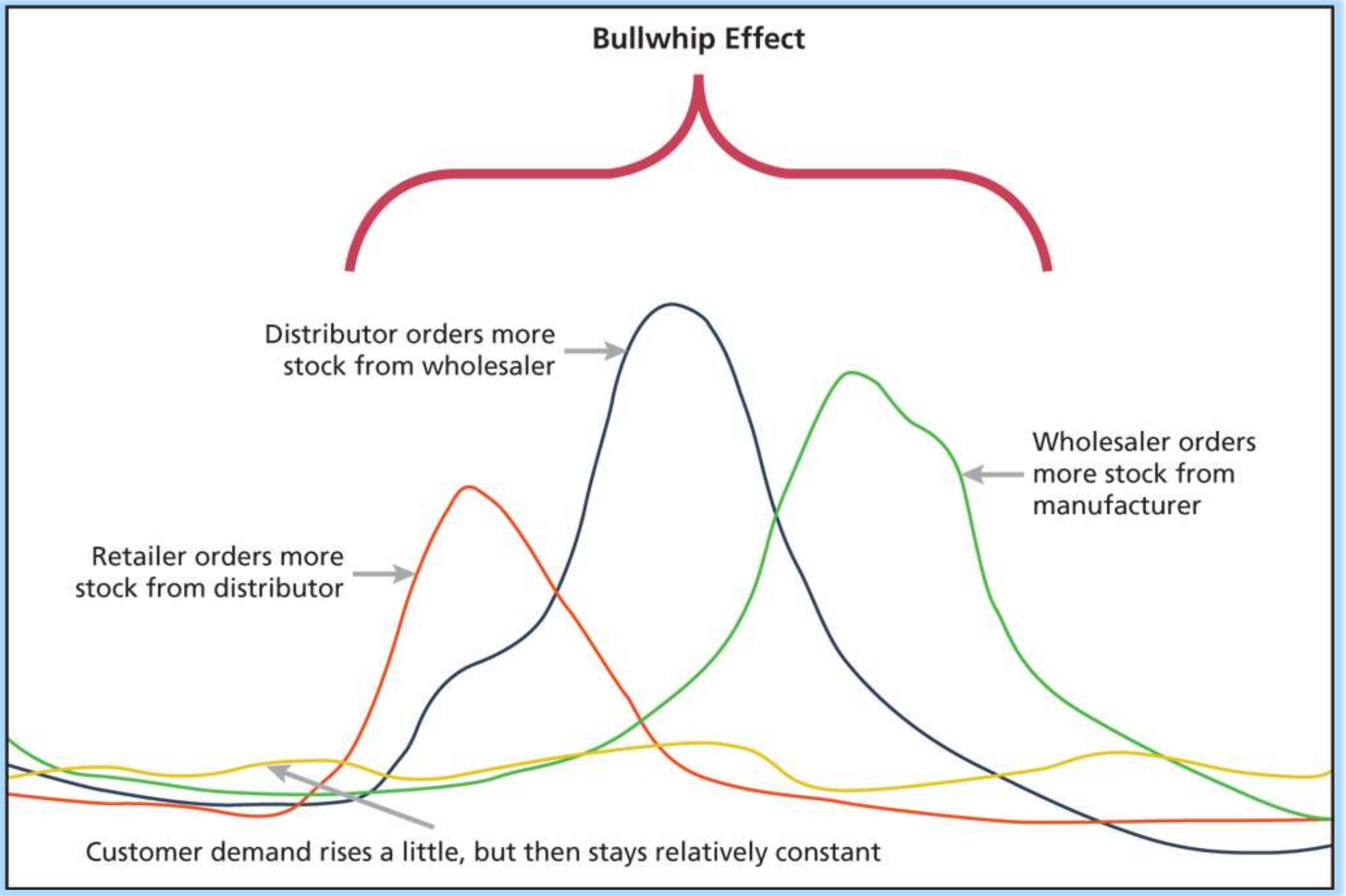


FIGURE 5-9
The bullwhip effect in a supply chain.

The Dell Supply Chain

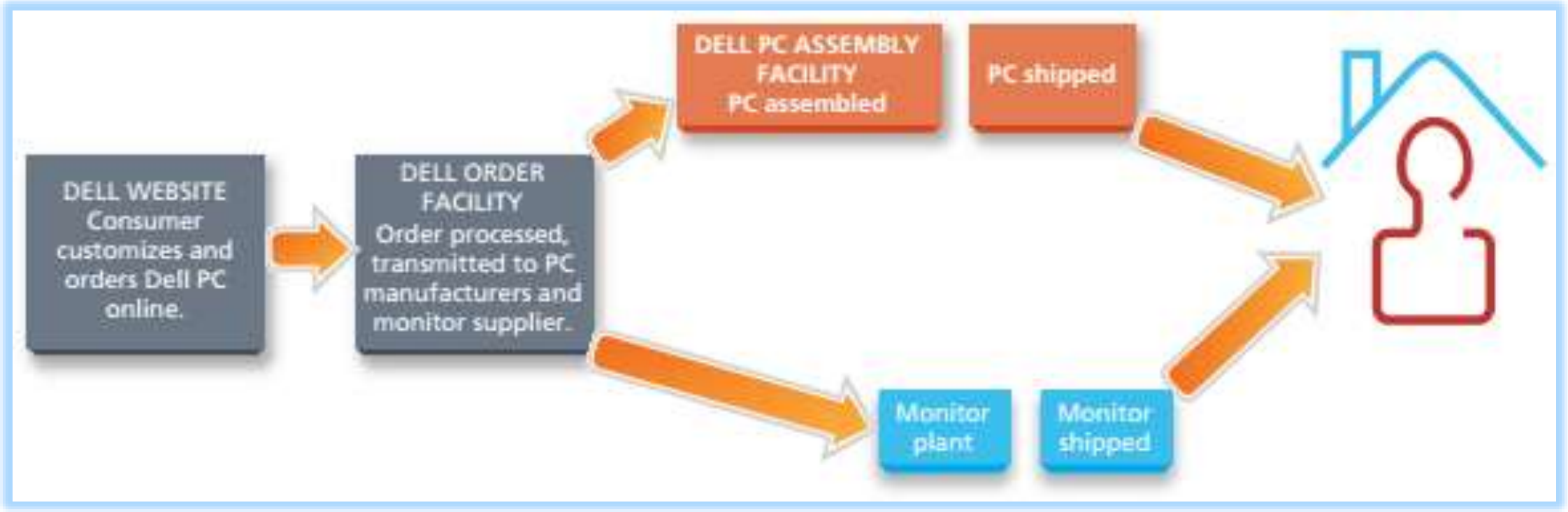
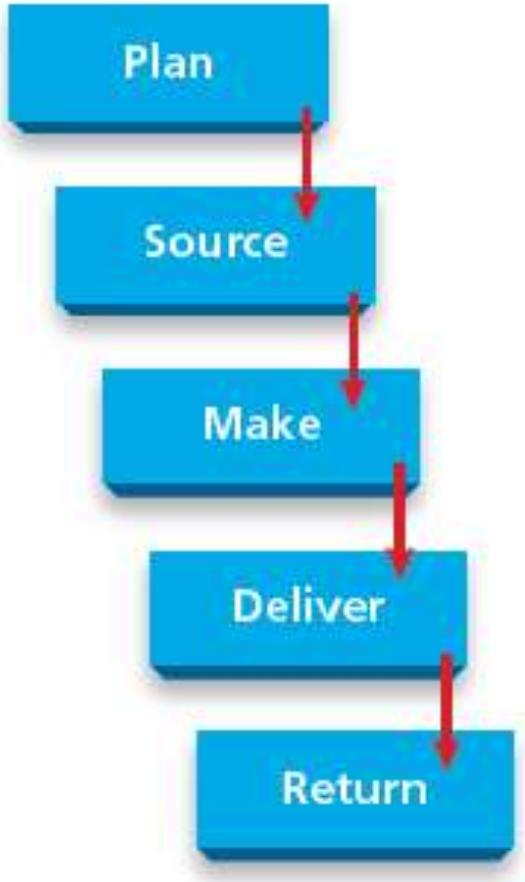


FIGURE 5-10
Dell's supply chain synchronizes delivery of the monitor with the PC, so they both arrive at the same time.

Supply Chain Fundamentals

- The fundamental functions in supply chain management are:
  - Planning and scheduling
  - Sources
  - Manufacture
  - Delivery
  - Returns
- The steps are generally sequential but there can be iterative cases

FIGURE 5-7
Steps in supply chain management.

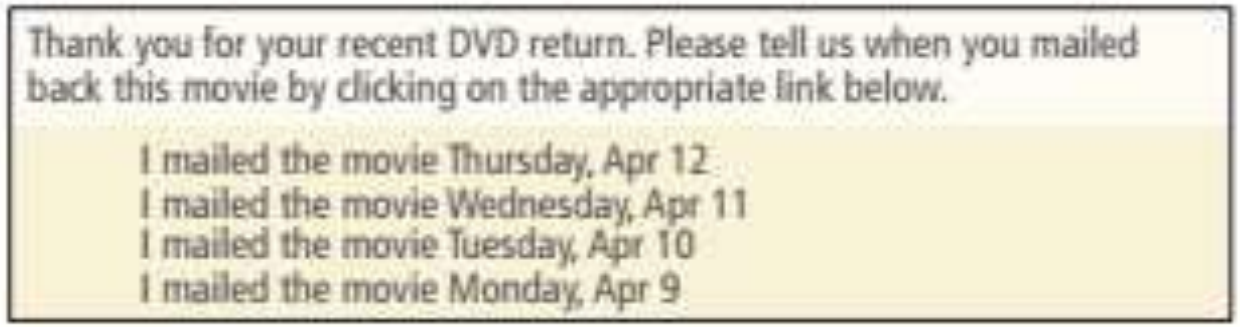


Measuring Performance in Supply Chains

- Supply chain visibility
  - How easily can supply chain metrics be tracked
- Supply chain metrics
  - Which metrics to track?
  - The main metric is demand forecast accuracy (DFA)
- Reducing supply chain costs
  - Multiple costs are incurred in the supply chain
  - Efficiency and lower cost are important to organisations
- Supply chain disruptions
  - Monitoring the ordering and delivery of materials and services
  - '*Just-in-time*' production strategies

Measuring Performance in Supply Chains

- To measure performance there are essential features to be implemented:
  - Visibility
  - Demand (sales) forecast accuracy
  - Examples of effective supply chain management include: Walmart, Dell, Nissan


Thank you for your recent DVD return. Please tell us when you mailed back this movie by clicking on the appropriate link below.

I mailed the movie Thursday, Apr 12
I mailed the movie Wednesday, Apr 11
I mailed the movie Tuesday, Apr 10
I mailed the movie Monday, Apr 9

FIGURE 5-8
Netflix surveys customers with emails like this one to improve visibility in the supply chain.

Information Systems and Technologies for SCM

- A software collection for a manufacturing company may include:
  - Supply chain planning software to predict demand, synchronize with supply, and optimize the whole network
  - Warehouse management software (WMS) to manage and optimize inventories, space allocation, shipments, cross-docking, and other warehouse activities
  - Transportation management software (TMS) to optimize shipping, logistics, and fleet routing and scheduling
  - Manufacturing execution system to manage activities and flow through the manufacturing process
  - Global trade management software to ensure compliance for cross-border transactions for importers and exporters

Collaboration in the Supply Chain

- Collaboration (as discussed in this course) is multi-factorial and an increasingly important feature of organisation
- As it relates to the supply chain we must consider:
  - Internal collaboration within an organization
  - External collaboration with partners and suppliers
  - *Electronic data interchange* (EDI)
  - Sharing improves visibility for orders, inventories, and data in the supply chain
  - Use machine readable data formats
  - Electronic markets

Sensing Technologies

- Sensing technologies:
  - Can include the Internet-of-Things (IoT) sensors and technologies
- Radio frequency identification (RFID)
  - Used in a diverse range of applications such as product identification
  - In the supply chain they monitor goods in transit to track location and movement
- Global positioning systems (GPS):
  - For an important component in transport planning, navigation, and location tracking to monitor the and movement of goods and vehicles
  - GPS uses three-dimensional location

Wireless Scanner

FIGURE 5-11
Wireless scanner captures barcode information and uploads to supply chain management system.

GPS (Satelite Systems)

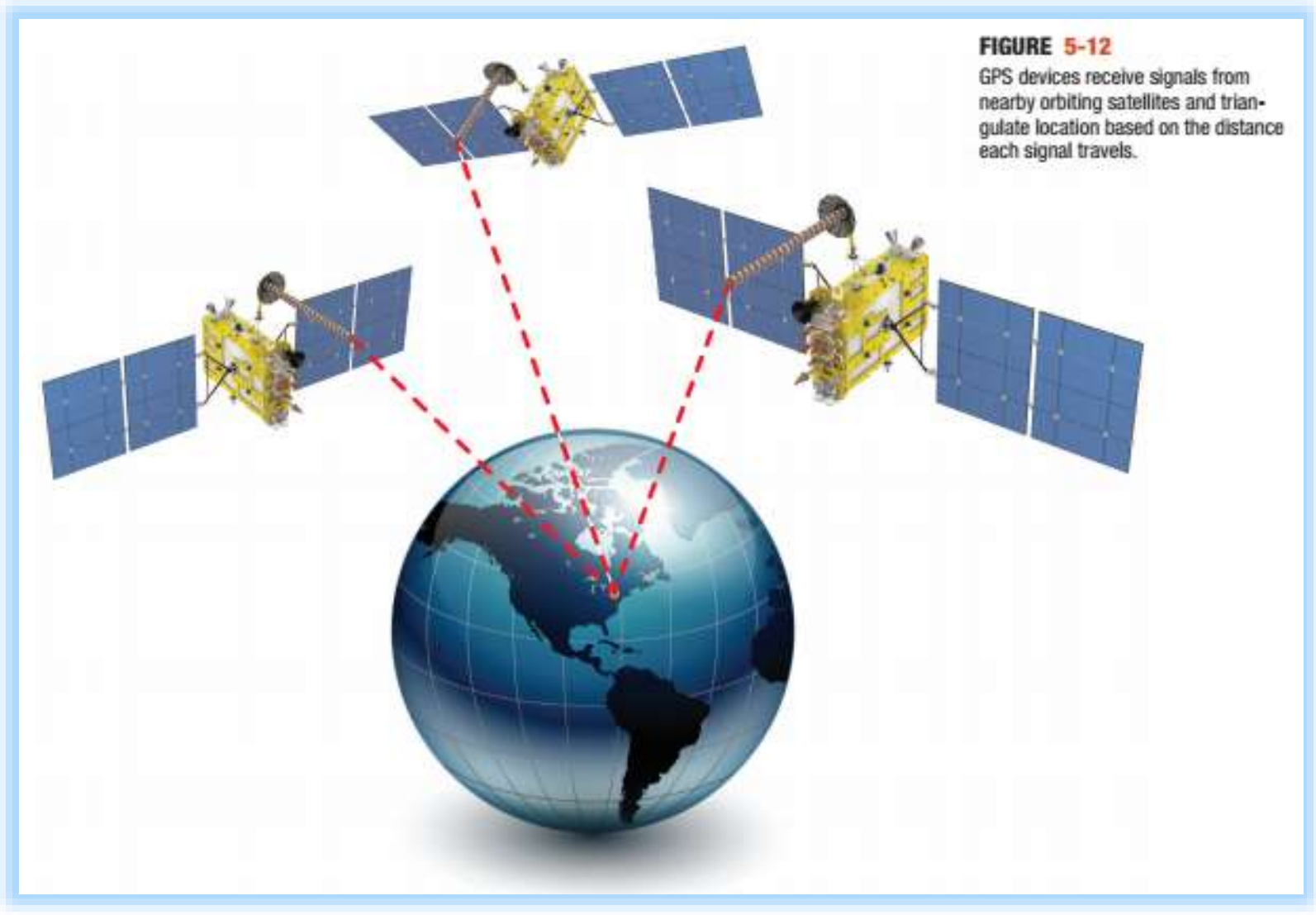


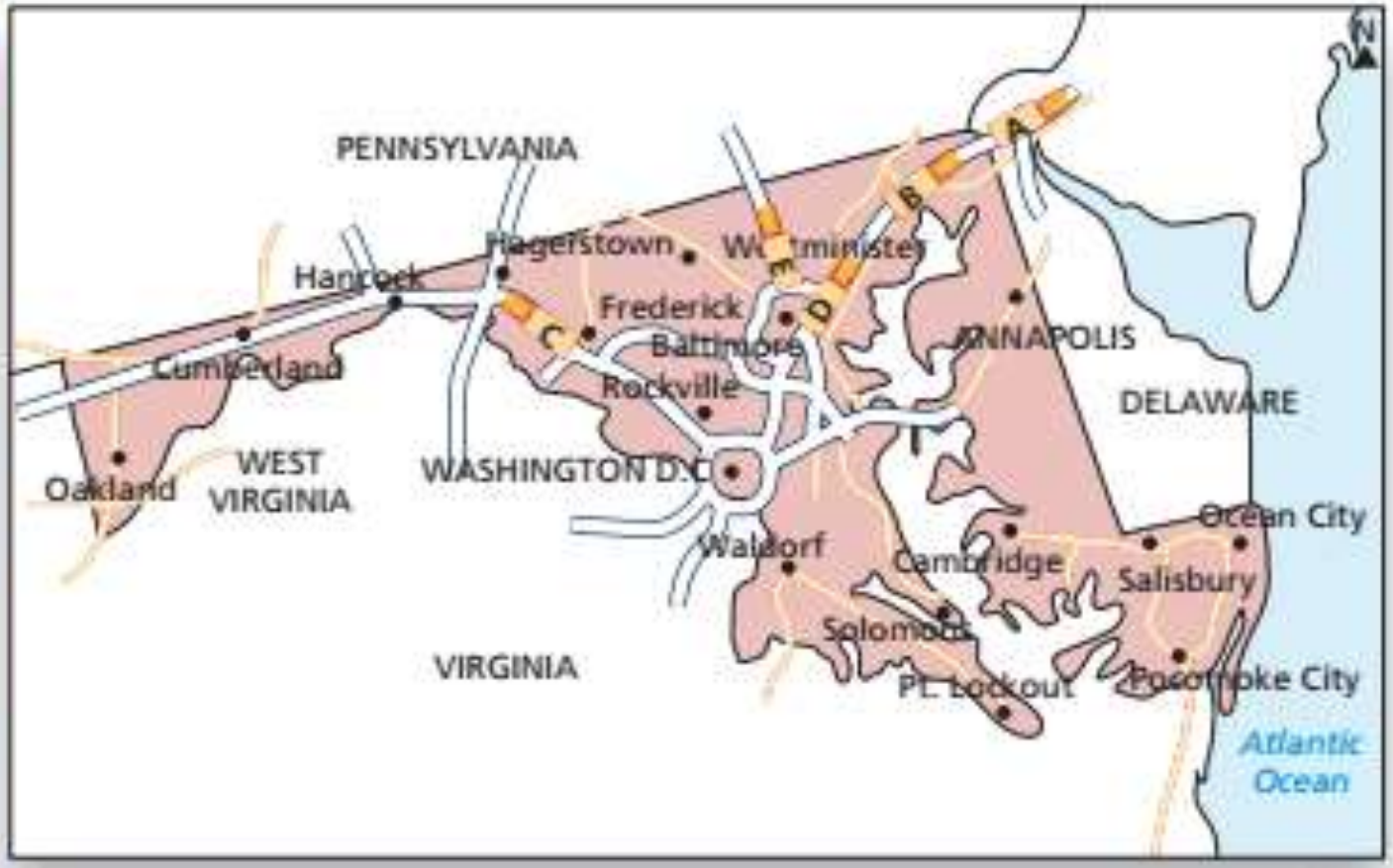
FIGURE 5-12
GPS devices receive signals from nearby orbiting satellites and triangulate location based on the distance each signal travels.

GPS for Vehicle Tracking

FIGURE 5-13

GPS software tracks the locations of vehicles in a fleet in real time.

Vehicle	Driver	Start Time	Speed
A	5786	4:05 AM Owings Mills	55 MPH
B	5633	7:15 AM Owings Mills	62 MPH
C	6777	9:00 AM Frederick	41 MPH
D	6554	9:21 AM Owings Mills	68 MPH
E	4001	9:45 AM Baltimore	32 MPH



Customer relationship management

Customer Relationship Management (CRM)

- A critical system in many heterogeneous organisation is the management of customer interactions with the company
- The IT system used is termed a *Customer relationship management* (CRM) system
- A CRM is designed to:
  - Manage the relationship between customers and organizations
  - Builds and maintains relationships with both current and prospective customers and addresses: strategies, processes, and information systems
  - A function of a CRM is the documentation of interactions to record the conversations (with customer agents) regarding complaints and solutions agreed plus feedback

CRM Goals and Objectives

- CRM systems target:
  - The building of stronger customer relationships (however)
  - To build such relationships organisations must have clear policies and be clear on their goals and objectives
- Typical goals are:
  - Improving customer retention
  - Improving profitability
  - Growing revenue
  - Listening to customers
  - Documenting complaint and solutions with feedback

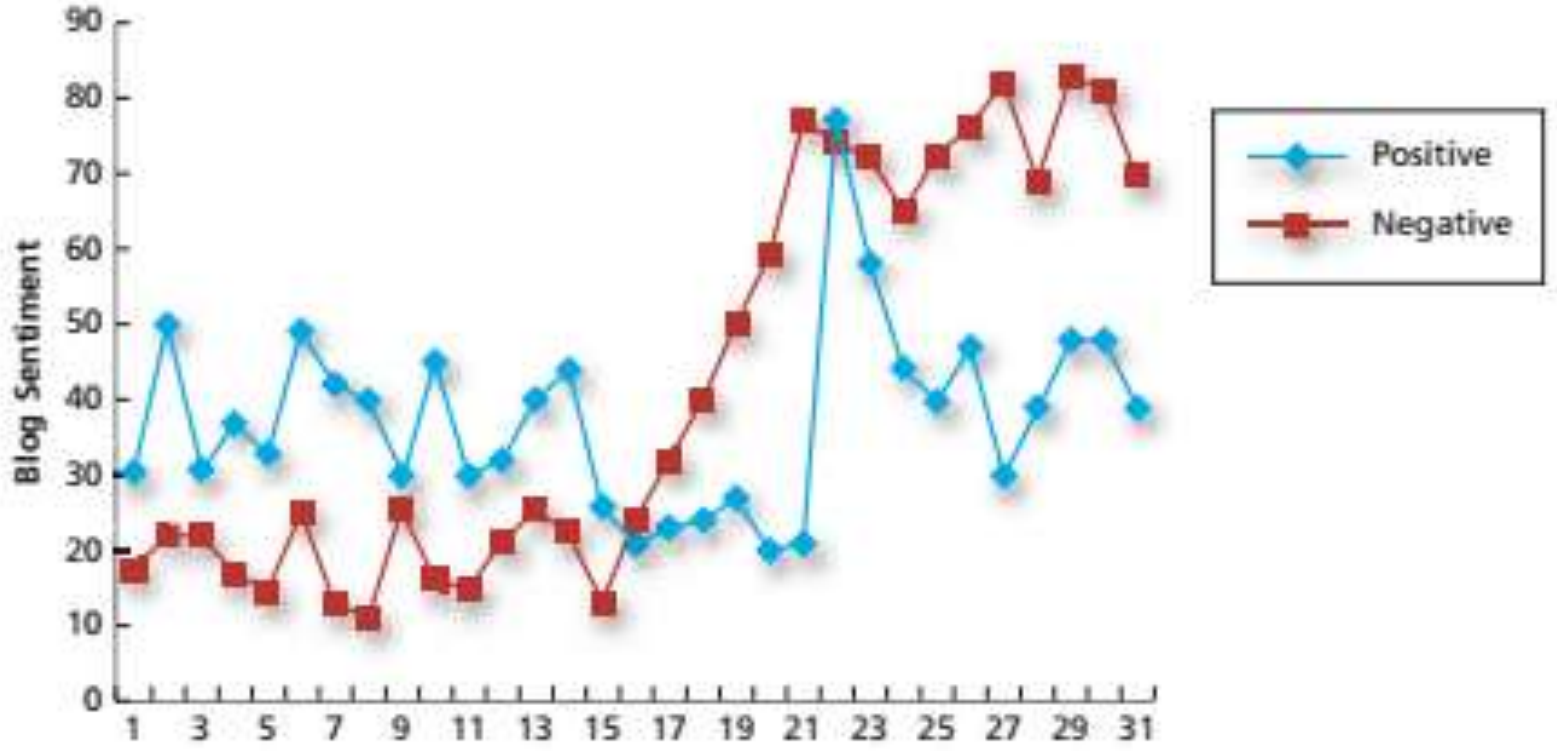
Customer Resource Management

- CRM strategies and technologies form a vital component in a range of information systems and corporate strategies for:
  - Marketing
  - Sales force automation
  - Customer service and support
  - The management of social media posts and complaints (see Figure 5.15)
- Mobile CRM applications:
  - Used by an organisations staff (to report interactions)
  - Used by customers (to contact companies and provide comments and feedback

Sentiment Analysis Dashboard

FIGURE 5-15

Sentiment analysis dashboards can show daily trends in positive or negative blog posts, recent Twitter activity, and other relevant information drawn from social media.



CRM Live Chat

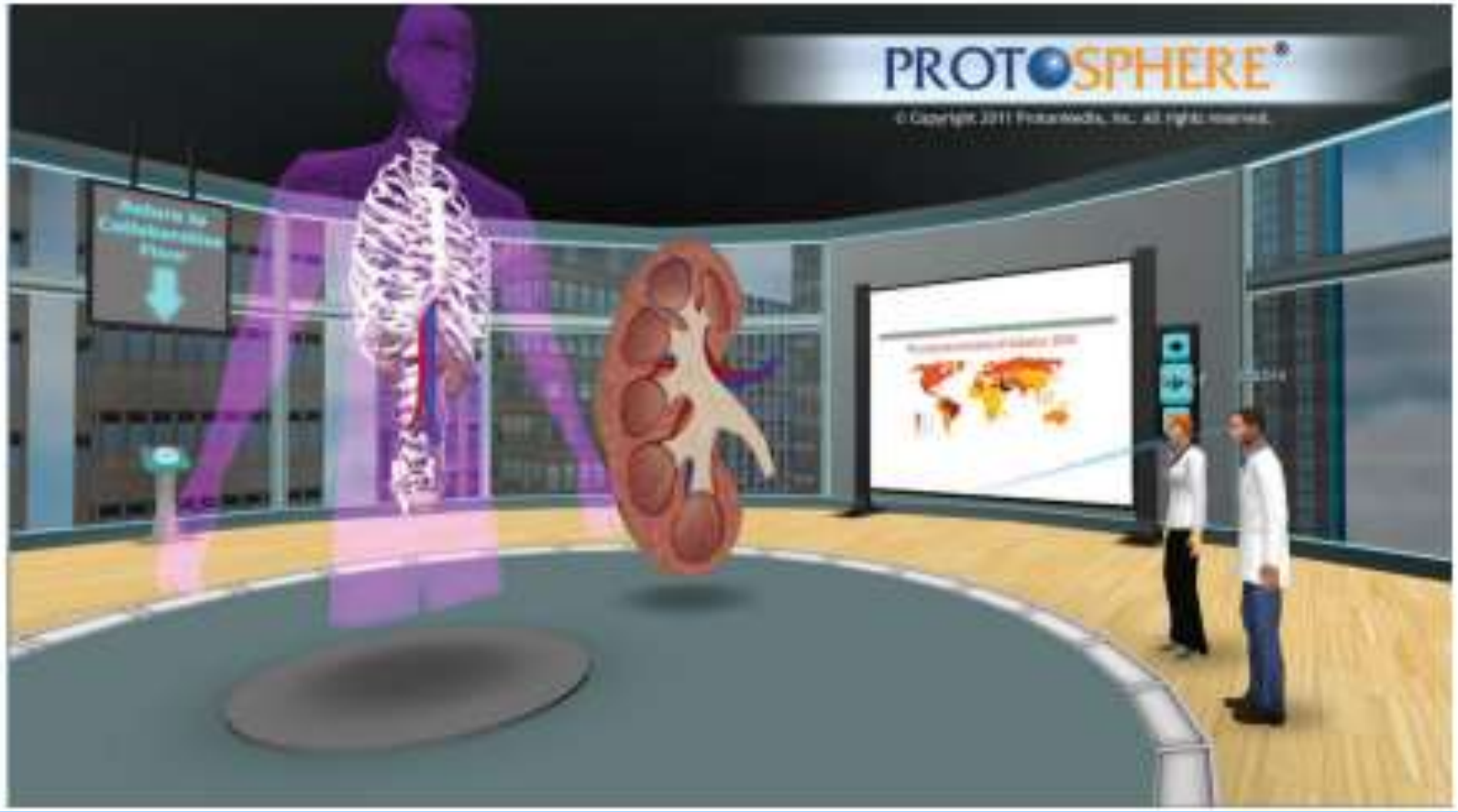
FIGURE 5-14
Click-to-chat functionality to provide just-in-time customer service.

CRM Strategies and Technologies

FIGURE 5-16
Customer relationship management systems support activities in several areas of the company, and integrated suites bring these applications together.

A Virtual Meeting Space

FIGURE 5-17
Virtual meeting space for business collaboration, from ProtonMedia.

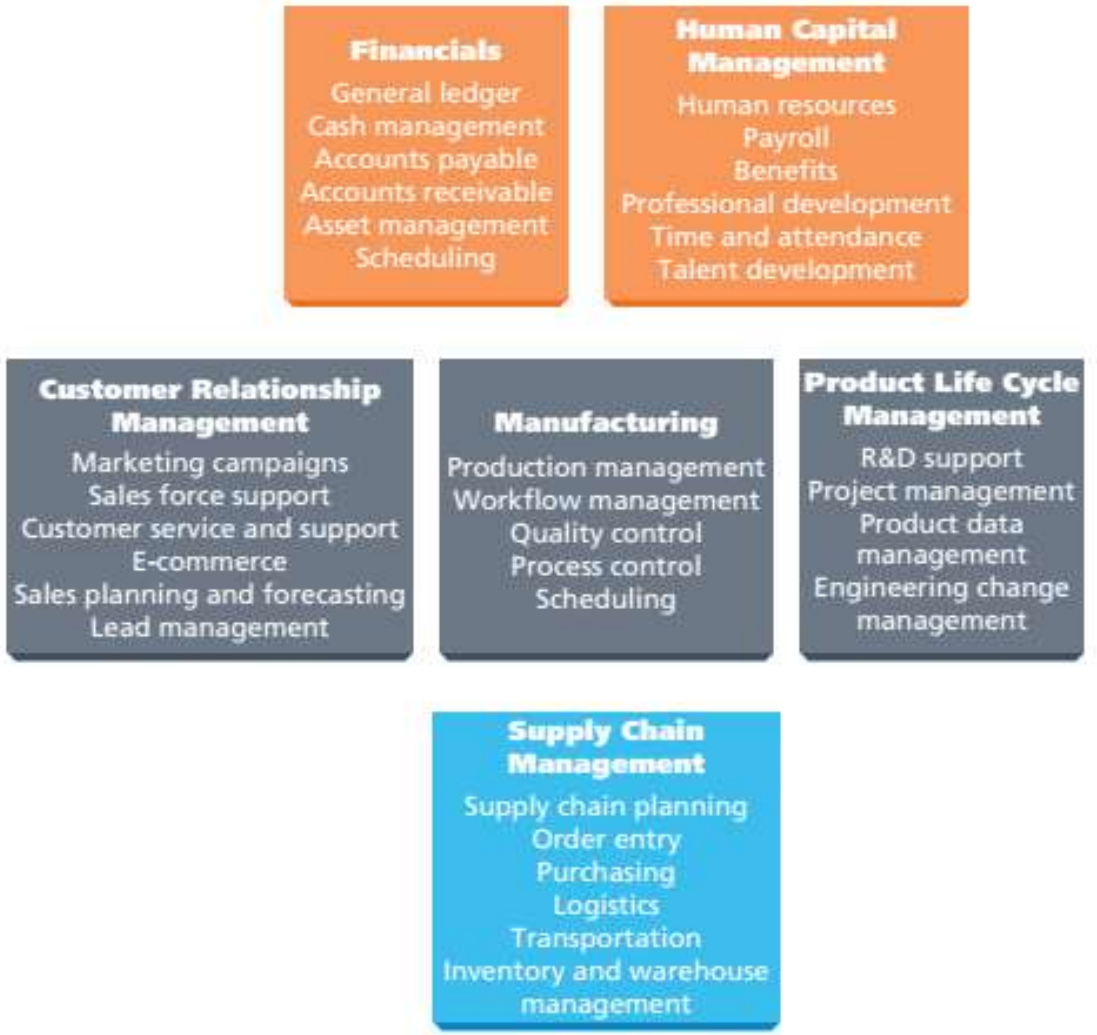


Enterprise Resource Planning (ERP) (bringing it all together)

ERP Systems

- ERP functionality is designed to Support *back office* business processes (see Figure 5.18):
- ERP uses:
  - Modules
  - Applications

FIGURE 5-18
Enterprise resource planning (ERP) systems typically include financials and human resources and often also support many other business processes.



ERP Portals for Tertiary Education

- Figure 5.20. shows:
- A *student* and *faculty* view of the ERP

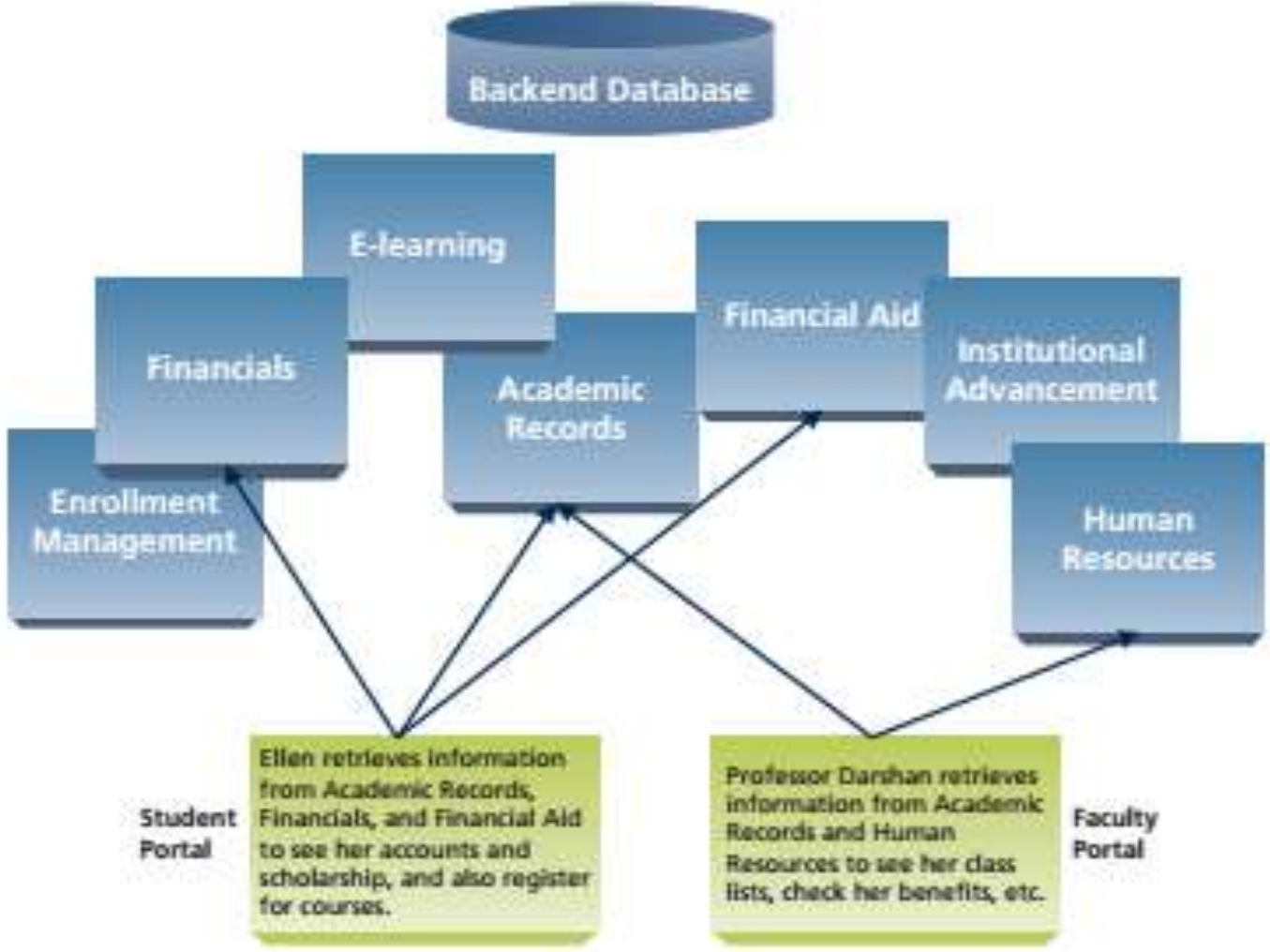


FIGURE 5-20
Using the portals of an ERP designed for higher education.

ERP for Tertiary Education

Module	Description
Financials	Tailored for nonprofit, educational institutions, using fund accounting
Human Resources	Human resources and payroll, benefits, time and attendance; system is customized to manage faculty employment conditions, such as tenure and joint appointments
Student Academic Records	Manages classes, courses, student admissions, student registrations, grades, class rosters, faculty assignments
Enrollment Management	CRM tailored to higher education, managing recruitment and retention
Financial Aid	Manages financial aid applications, awards, budgets, and interfaces with aid sources, such as government agencies
Institutional Advancement	Tracks donations, pledges, and gifts, and manages contacts and donor relationships
E-Learning	Provides support for online classes with multimedia presentations, discussion forums, blogs, wikis, assessments, grade books, and other features

FIGURE 5-19
Components of an ERP with modules specialized for higher education.

Integration Strategies

- Integration strategies
  - *ERP suites*
  - *Best of breed*
  - *Middleware*
- Integration issues
  - *Complexity*
  - *Issues in making a change of ERP suite*
  - *Location differences*
- An ERP and software-as-a-service
  - *Subscription-based* services and solutions
  - *ERP* has both *advantages* and *disadvantages*

Implementation Issues

- Implementation can be a dangerous phase in the roll-out of an ERP system
- Major changes in an organisations information systems requires:
  - Preparation for major change
  - A clear implementation and roll-out strategy
  - The preparation of staff and stakeholders for the new ERP system
    - *This will require training and IT assistance from the roll-out and over time*
  - The changes can be reflected in:
    - *New processes can with massive changes in terminology, workflow, supervisor approvals, and accounting entries*
    - *A new ERP system is clearly a significant strategic decision*

ERP Module Implementation Strategies

FIGURE 5-21
Strategies for integrating ERP modules.

Integration Approach	Description	Pros	Cons
The engineered suite	Built from the ground up with consistent user interfaces, integrated backend database, and a single architectural foundation.	Data integrity is high, with consistent, up-to-date, and nonduplicated elements.	Modules are highly interdependent so organizations have to implement and/or upgrade all systems together. Switching costs are high.
Suite with synchronized modules	Vendor provides middleware to connect and synchronize systems that may be running on different platforms.	A common, vendor-provided architecture overlays the systems to improve consistency across the modules.	Modules are integrated at the edges, and the bridges can be fragile.
Best of breed suites	Separate systems, deployed because they each match user requirements closely, but integration is weak and architectural foundations can be very different.	Modules can have very rich functionality and can be implemented individually, reducing risk.	Processes, interfaces, and data may not be consistent across systems. Connections and synchronization, which can be error-prone and costly, may be done in-house or by vendor.

Chapter #5 summary, case studies, and coursework

Chapter #5 Reading and Coursework

- Read and understand subjects and concepts introduced in Chapter #5
- Learn the meanings of the *key terms and concepts* introduced
- Read and work through:
  - The *Custom Cakes* on-line simulation (see also Figure 2.16)
  - The (two) *case studies*
  - The (two) *e-projects* (located on page 226 at the end of Chapter #5)
- At the end of the chapter you will find:
  - *Chapter review questions*
  - *Projects and discussion questions*
  - *Application exercises*
  - Work through these to understand the subjects and concepts in Chapter #5

MyMISLab | Online Simulation

Custom Cakes

A Role-Playing Simulation on Enterprise Information Systems and the Supply Chain

The CEO of Custom Cakes is not happy. "Not again! Seems like every day we are either out of stock—which makes our customers mad—or we're loaded with excess inventory that didn't sell. So today it's the line of frustrated customers. I hope you can fix this supply chain and get a handle on that bullwhip effect!"

Custom Cakes is a store in the mall that sells delicious layer cakes with white icing. Inside each box is a special kit with a packet of decorations and several tiny tubes of colored icing that customers use to write their own message on top. Procrastinating customers who forget to order party cakes in advance really appreciate those kits, and also buy templates so their cake writing looks more professional.

The company is growing fast, and most of its information systems are supporting business processes well. But its growth is hampered by lost revenue because of supply chain problems. The former assistant manager did his best, but now it is your turn. As the new assistant manager, your job is to get familiar with the company and its information systems, and then take on the supply chain problem. Log in when you are ready to get to work. . . .

CHAPTER 5

Chapter Summary

LEARNING OBJECTIVES

1. The four major categories of information systems that support business processes common to most organizations are finance and asset management, human capital management (HCM), supply chain management (SCM), and customer relationship management (CRM). Finance and asset management systems incorporate modules to support accounts payable, accounts receivable, procurement, cash management, budget planning, asset management, general ledger, and financial reporting. Compliance reporting has become especially important for financial systems, with stringent regulations that require electronic reporting using XBRL, a business report language in the XML family intended to make reports more transparent, consistent, and computer-readable.

2. Human capital management systems include core human resources functionality, along with other modules that support a broader range of employee-related applications. Workforce management software offers labor-scheduling tools, and also tracks time and attendance, leave, and project assignments. Talent management helps map the employee life cycle, from recruitment through career development, and to retirement. Social software is also sometimes included, especially to encourage mentoring. Metrics from these systems, including performance and productivity measures, can help reveal how well an organization is managing and nurturing its human capital.

3. Supply chain management supports processes that optimize the flow of products and services from their source, through the company, and to the customer. The five steps in supply chain management are (1) plan, (2) source, (3) make, (4) deliver, and (5) return. Improving visibility in a supply chain helps managers see metrics that help assess overall effectiveness, in a retailer's real-time sales, for example. The bullwhip effect occurs in a supply chain when visibility is low. Collaboration to improve visibility among suppliers and customers uses electronic data interchange (EDI) or XML. Sensing technologies such as RFID and GPS also help improve visibility.

4. Customer relationship management (CRM) revolves around customer records, especially to improve retention, increase profitability, grow revenue, and listen to customer sentiments. CRM's diverse software applications are especially useful in marketing, sales force automation, and customer service and support. Included in this category are software tools to support email marketing, loyalty programs, marketing campaigns, online customer service, contact management, sentiment analysis, mobile phone advertising, and more.

5. Enterprise resource planning (ERP) systems integrate two or more of the applications that support major business processes common to most organizations, especially finance and human resources. ERPs from major vendors incorporate functionality for CRM, SCM, manufacturing processes, analytics, and other business requirements as well. Some ERPs have tightly integrated modules, whereas others synchronize data across modules that are more loosely integrated, using middleware. Implementing an ERP is a major challenge, partly because so many applications are replaced and so many processes are affected at the same time. SaaS versions are being offered, which can be easier for some organizations. Despite the hurdles, most organizations find the integrated ERP solution very valuable, especially for finance and human resources.

KEY TERMS AND CONCEPTS

financial management system
eXtensible Business Reporting Language (XBRL)
human capital management (HCM)
human resources management (HRM) system
workforce management module
talent management
supply chain management (SCM)
visibility
demand forecast accuracy (DFA)
bullwhip effect
electronic data interchange (EDI)
global positioning systems (GPS)
customer relationship management (CRM)
sentiment analysis
web beacon or web bug
enterprise resource planning (ERP)
middleware

CHAPTER REVIEW QUESTIONS

5-1. What are the four major categories of information systems that support business processes? Which of these can be incorporated in running a fast-food chain?

5-2. What role does a financial and asset management information system serve in an organization? Why is financial reporting important? What are exception reporting and compliance reporting? Why is each important?

5-3. What is human capital management? What are the major components of a human capital management information system? What are examples of metrics used to quantify human capital? How are these metrics used?

5-4. What is supply chain management? What is the most important metric in supply chain management? What does it measure? What are examples of supply chain management software? How is each used to support supply chain processes?

5-5. What is customer relationship management (CRM)? What are the objectives of CRM? How do organizations measure their customer relationship? How do information systems support each objective of CRM? What are three basic categories of CRM technologies? How do information systems support activities in each area?

5-6. Why are ERP systems important to organizations? What are the typical components of an ERP system? What is meant by the term "a suite of suites"? What are three approaches to ERP integration? What are some of the issues associated with an ERP implementation? What is the success rate for ERP implementation? What is the primary benefit of a successful ERP implementation?

PROJECTS AND DISCUSSION QUESTIONS

5-7. Sensing technologies are everywhere in the supply chain. Describe some of these sensing technologies and discuss the benefits they provide. Search the Internet to learn more about one of these technologies and how it is used in the supply chain. Prepare a 5-minute presentation of your findings.

5-8. Do you tweet? Twitter claims its users are sending 400 million tweets a day.[33] That's a lot of Twitter chatter! What is sentiment analysis? How do organizations use sentiment analysis to manage customer relationships? Visit www.tweetfeel.com and enter the name of your city to learn what Twitter users are saying about your hometown. Then visit www.tweetfeel.com/biz to learn how organizations can use this online tool to improve customer relations. Describe how TweetFeel works. What are search sets? Does TweetFeel work in real time? How do you think Twitter chatter will change when users learn it is being monitored?

5-9. Does your college or university let you sign up to receive emergency alerts on your cell phone? What are the advantages of this system? How does this differ from using mobile devices for marketing purposes? What are the challenges of implementing mobile CRM targeted to customers? Describe several approaches to mobile CRM that are welcomed by customers. What are the advantages to employees of providing them mobile access to CRM?

5-10. Many colleges and universities use Banner, a higher education software ERP system. Describe the ERP system at your college or university. Compare the modules described in Figure 5-19 to the system components that you access during the semester. Which modules do you use? How do you use those modules? Which modules are used by university faculty and staff?

5-11. Many CRM systems are integrating social networking technologies to improve customer relationships. Search several social networking sites such as Facebook, Twitter, and YouTube to identify how a specific company such as Dell, Coca-Cola, or McDonald's is using social media to interact with customers. Prepare a 5-minute presentation of your findings.

5-12. Work in a small group with classmates to identify the types of information that you would need for an HCM module to help you identify individuals in an organization who have the potential for promotion. How would you use this information to manage high potential employees?

APPLICATION EXERCISES

5-13. EXCEL APPLICATION: Performance Bicycle Parts

Ted Stevens owns an Internet-based bicycle accessories website that sells bicycle tires, tubes, chains, sprockets, and seats, as well as helmets and water bottles. The bicycle parts aftermarket is very competitive, and Ted realizes that having both a low price and sufficient inventory to offer same-day shipping are critical to his success. He has a global supply chain and relies on many different supplier sources for the quality products his customers demand.

Ted sells more replacement tubes than any other product. For this item, customers expect high quality at a competitive price. Ted spent several months evaluating the quality and performance of six potential suppliers for the most popular replacement tube, the 29" × 1.85"–2.20" presta tube. These suppliers manufacture replacement tubes of comparable quality and performance. With the right price, quality, and availability, Ted expects to sell an average of 12,000 tubes per month, or 400 tubes per day, for $6.50 each. However, he is concerned about the amount of cash or working capital required to support the level of inventory he needs to provide same-day shipping.

Using the information provided in Figure 5-22, create a spreadsheet to analyze the replacement tube cost structure for six potential suppliers. Per unit import duty cost equals the import duty rate multiplied by the sum of per unit base cost and the per unit shipping cost. The per unit warehouse cost is the sum of the per unit base cost and the per unit shipping cost and the per unit import duty cost. The per unit total cost is the sum of the per unit warehouse cost and the average per unit carrying cost.

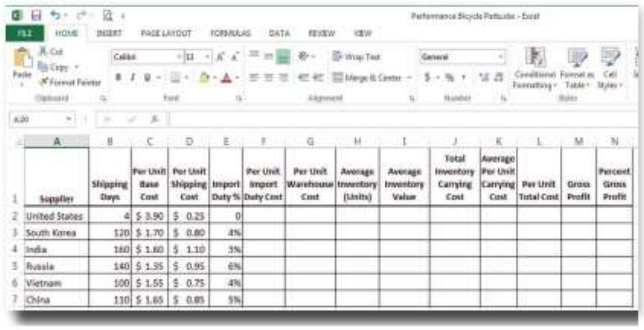
Required inventory levels are based on projected daily sales times the number of shipping days required for delivery from the supplier to Ted's warehouse. A longer delivery time requires Ted to maintain a higher level of inventory. Thus, he wants to include inventory carrying costs in the analysis. Ted maintains average inventory (units) based on 150% of projected daily sales multiplied by the number of shipping days from the supplier. The average inventory value equals the per unit delivered cost multiplied by the average inventory (units).

Inventory carrying costs include the cost of putting away stock and moving material within the warehouse, rent and utilities for warehouse space, insurance and taxes on inventory, and inventory shrinkage. Ted calculates his total inventory carrying costs at 24% of the average inventory value. The average per unit carrying cost equals the total inventory carrying cost divided by the total number of units sold per year (144,000).

Which supplier source requires the highest investment of working capital or cash for average inventory? Which supplier source provides Ted with the highest percentage of gross profit on the presta replacement tube?

5-14. ACCESS APPLICATION: VSI Consultants

VSI Consultants Group, Inc., is a professional IT consulting firm that provides business and nonprofit organizations with the highly skilled IT professionals they need to complete IT projects and resolve staffing problems. VSI matches employees with client projects based on employee education, skills, and experience. Emily Loftus, the HR manager, has asked you to use the information provided in the spreadsheet shown in Figure 5-23, Figure 5-24, and Figure 5-25 to create an Access database to manage employees and projects. You can download the Excel file Ch05Ex02 and import the worksheets to tables in your database. Emily wants you to create two queries. The first query identifies the best candidates for three client projects: U.S. Brokerage, Helen's Clothiers, and Solar Systems. The second query matches employees with projects. Specifically, she wants to match projects for two employees: Y326 and T871. What other queries may be useful to Emily?



	A	B	C	D	E	F	G	H	I	J	K	L	M	N
1	Supplier	Shipping Days	Per Unit Base Cost	Per Unit Shipping Cost	Import Duty %	Per Unit Import Duty Cost	Per Unit Warehouse Cost	Average Inventory (Units)	Average Inventory Value	Total Inventory Carrying Cost	Average Per Unit Carrying Cost	Per Unit Total Cost	Gross Profit	Percent Gross Profit
2	United States	4	$ 3.90	$ 0.25	0									
3	South Korea	120	$ 1.70	$ 0.80	4%									
4	India	160	$ 1.60	$ 1.10	3%									
5	Russia	140	$ 1.35	$ 0.95	6%									
6	Vietnam	100	$ 1.55	$ 0.75	4%									
7	China	110	$ 1.65	$ 0.85	5%									

FIGURE 5-22
Suppliers for Performance Bicycle Parts.

FIGURE 5-23
Employee data.

	A	B	C	D	E	F	G
1	Employee Data						
2	Employee ID	Last Name	First Name	Undergraduate Degree	Advanced Degree	Yrs. Exp.	Skills
3	V321	Victor	Albert	BS Computer Sciences	MS Computer Sciences	3	1,3
4	J045	Johns	Carl	BS Mathematics		2	2,5
5	B195	Barton	Alice	BS Management	MBA	1	1,5
6	C013	Cox	Amanda	BS Accounting		3	2,5
7	Y326	Yee	Han	BS Accounting	MS Accounting	6	5
8	W821	Watson	Helen	BS Computer Sciences		8	2
9	J342	Johnson	Sally	BS Education		7	3,4
10	T078	Thornton	Robert	BS History		4	3
11	R430	Randal	Joyce	BS Economics	MBA	2	5,6
12	N541	Nottingham	Henry	BS Mathematics		3	1,2
13	C427	Cary	Jane	BS Computer Sciences	MS Computer Sciences	5	1,5
14	U039	Underwood	Frank	BS Accounting		2	4,5
15	M432	Morgan	Thomas	BS Mathematics		7	4
16	P549	Palmer	James	BS Electical Engineering		5	2,4
17	B130	Boston	Matt	BS Computer Sciences	MS Computer Sciences	3	4,5
18	S0343	Soloman	Robert	BS Computer Sciences		6	2
19	F430	Francis	Tom	BS Logistics		2	4,5
20	T871	Trenton	Mary	BS Matematics	MS Matematics	3	2,4
21	A321	Alverez	Hernando	BS Computer Sciences		4	1,2,4

FIGURE 5-24
Skills data.

	A
1	SKILLS
2	1 = Database management
3	2 = Business Intelligence
4	3 = Web-design
5	4 = ERP Systems
6	5 = Project management

FIGURE 5-25
Open projects data.

	A	B	C	D	E	F
1	Open Projects					
2	Client	Project Type	Min. Exper.	Basic Skills	Add'l Skills	Preferred Degree
3	JM Logistics Inc.	1	4	1	4	BS CS or Math
4	Jefferson Automotive	4	5	4,5	1	MBA
5	World-wide Sourcing	2,4	5	2	4	BS Accounting or MBA
6	Solar Systems	2	2	2		BS Math, BS CS, BS Acctg.
7	Robert's Heating Supply	3	2	3		none
8	Casual Dining, Inc.	2	3	2	1	BS CS
9	US Brokerage	1,2	5	1,2	5	BS CS, BS Math. Or MBA
10	Computer Chips, Inc.	4	3	4,5	1	none
11	Southeast Region Youth Ministries	1,2	4	2	1	BS CS or Math
12	Huston Power Co.	1	5	1		none
13	Helen's Clothiers	4	3	4	1	BS CS, BS Acctg., BS Math.
14	McMasters Printing	3	2	3		none
15	United Grocers	4	5	1,4	5	MBA
16	Shelby County Women's Shelter	1	2	1	5	none
17	National Distributors	1,3	5	1,3	2	BS Accounting

CASE STUDY #1

Helping the Homeless: A Customer-Centric Approach with CRM Software

Banita Jacks and her daughters fell through many cracks in the maze of government-funded human services in the District of Columbia. Jacks sought help at least 23 times from 11 different agencies, but their separate information systems made it difficult for any of them to obtain a complete understanding of the family's desperate plight. Federal marshals finally visited their row house, where the mother had been living with her dead daughters' bodies for more than 7 months. At her trial, Jacks claimed the children were possessed by demons, and she is now serving a 120-year prison sentence.

The poorly integrated systems left giant information gaps that hampered agencies trying to help. For example, Child and Family Services received an anonymous hotline tip that the mother must be neglecting the girls, but since the agency didn't have any home address, no caseworker followed up. Other agencies had an address, but their systems didn't track the complaint. Teachers at the girls' school attempted unsuccessfully to contact the family when they were absent, but they knew nothing about the neglect charge. Information wasn't shared, and service workers who handled the family's requests rarely followed up.

Although this tragic case led to investigations and a round of firings, the real problem was in the information systems. Agency directors want to transform the way these systems work by implementing an integrated information system to share data. The agencies need the same kind of customer-centric systems that private industries have when they install customer relationship management (CRM) software. In a financial institution, for example, employees in different departments might see individual events that could be warning signs pointing to a dissatisfied customer. The broker might know that the customer sold stocks and moved the funds to a cash account, or the retirement counselor might receive a call from the same customer, inquiring how to roll over an IRA. With an integrated system, these individual events will paint a picture so that company reps can follow up.

Nevertheless, CRM efforts in human services agencies face different kinds of challenges compared to corporate CRM initiatives. First, lawmakers must approve the project and provide funding. A project of this magnitude could run $10 million or more, and city officials are reluctant to spend such a huge sum on IT when budgets for shelters are being cut, despite overcrowding.

Another concern involves privacy. The Child and Family Services worker, for example, would need access to data on a family's food stamps, disabilities, homelessness, health records, and schooling. Privacy advocates object to legislation that allows widespread access to so much personal information about children at risk and homeless families because it impinges on confidentiality. Striking a balance between privacy concerns and the desire to help these families is not easy.

Medical records are legally protected, though knowledge about past history could help caseworkers identify problems. For example, one woman was treated for mental illness many times, but a caseworker who visited her home didn't have that information. She reported no significant problems in parenting; a few weeks later, however, the troubled mother tried to drown her children.

While confidentiality, privacy, and funding are challenges, resistance to change also contributes. Former DC Human Services Director Clarence Carter suggests that many people just want to keep doing what they do, because that's how they've always done it. "We are hired and held accountable for the administration of programs, not for the well-being of individuals. That has got to change," said Carter. Adopting a CRM approach that involves listening to the customers and adapting services to what they need will help.

Discussion Questions

5-15. How did the previous lack of integration impact the District of Columbia Department of Human Services' ability to serve its clients?

5-16. With respect to the challenges involved in implementing projects involving information systems, how does the public sector compare with the private sector?

5-17. How do privacy challenges in the social service context compare with challenges in other public services such as traffic enforcement?

5-18. What features can be incorporated in CRM software to adapt it for human services agencies that help the homeless?

Sources: Al-Khouri, A. M. (2012). Customer relationship management: Proposed framework from a government perspective. *Journal of Management & Strategy, 3*(4), 34–54. Business Source Complete, EBSCOhost, accessed March 30, 2013.
Alexander, K. L. (February 22, 2013). Southeast mother charged with attempting to drown four children by driving them into Anacostia River. *The Washington Post*, http://articles.washingtonpost.com/2013-02-22/local/37242587_1_nicole-johnson-children-public-defenders, accessed March 25, 2013.
Cherkis, J. (October 8, 2009). Banita Jacks is behind bars. Now comes the $6 million legislation honoring her children. *Washington City Paper*, http://www.washingtoncitypaper.com/blogs/citydesk/2009/10/08/banita-jacks-is-behind-bars-now-comes-the-6-million-legislation-honoring-her-children/, accessed March 25, 2013.
Nash, K. S. (2010). Government IT: Fixing service delivery to put customers first. *CIO Magazine*, May 14, p. xx.
Schainker, S. (2013). To achieve exceptional service, you must first listen to your customer. *Public Administration Review, 73*(2), 228–229. Retrieved from Wiley Subscription Services, April 3, 2013.

CASE STUDY #2

Winning the War for Talent: The Mandarin Oriental's Talent Management System

Colleagues is the term that the Mandarin Oriental Hotel Group uses to refer to employees, and a major goal for this luxury chain is to recruit, train, and retain the most productive people in the hospitality industry. Starting in 1963 with a single luxury hotel in Hong Kong called the Mandarin, the company expanded slowly, acquiring a stake in the landmark Oriental Hotel in Bangkok. That hotel first opened in 1865 and enjoyed a grand tradition, having survived several wars and hosted countless authors, celebrities, and government leaders.

Over the years, the Mandarin Oriental Hotel Group grew to over 40 properties in more than 25 countries, with 15 more in development in locations such as Doha, Qatar, and Shanghai, China. Each hotel is as distinctive as the first two. The company does not want a "monoculture," so each property takes on its own personality to match the local market. But the company's leaders also strongly believe in establishing clear standards and performance indicators for every position and job function. The Hotel Group's HR department in Hong Kong oversees the process so that, for instance, the chef at the Mandarin Oriental in Singapore will meet the same standards as the chefs in Boston, Bangkok, and Bermuda. Locally, each hotel's human resources team can tweak policies and procedures, especially because employment laws and cultural factors differ. But the underlying standards are global.

To manage this empire and ensure that every hotel contributes to its reputation for unsurpassed customer satisfaction, the company relies on a global approach to talent development. With more than 10,000 colleagues speaking many different languages in Asia, Europe, the Americas, Middle East, and North Africa, the company implemented a specialized talent management system. The system relies on SuccessFactors' cutting edge human capital management (HCM) system, which was purchased by SAP in 2012 to replace SAP's aging HR system.

The HCM system provides the building blocks to assess each colleague's performance, and it also adds a means to determine career development paths and training needs. Both staff and managers can input information about performance, and they can add notes about development plans so that colleagues know what they should do to advance their careers.

The system also supports succession planning, because every individual's capabilities and career progression are easily accessed. This helps managers see functional areas that might lack depth, and in which a sudden departure of a key employee could be a serious setback. If there is no one with the knowledge and skills to step in easily, either by transferring someone from a different hotel or promoting someone locally, the chain is taking a risk.

Group Director of HR Paul Clark says, "The system is doing the job of tracking careers with the [Mandarin Oriental] group. It helps us to determine who is ready for the next career step and then we actively promote internally." A major advantage is that colleagues are well aware that they have attractive career opportunities, and they know what training they need to pursue them. A side benefit of systems such as this is that the emphasis on career development and interactivity increases the motivation of executives to do performance appraisals with more care.

Companies may never actually win the war for talent, but they must engage in it continually to attract and retain the most productive people. Talent management systems can help them do that.

Discussion Questions

5-19. How does the talent management system help Mandarin Oriental balance the needs of global coordination and local responsiveness?

5-20. Why would it be important for Mandarin Oriental to have an integrated HR database?

5-21. What are the benefits for Mandarin Oriental executives? What are the benefits for Mandarin Oriental employees?

5-22. What metrics can be utilized to assess the talent management system?

Sources: Freyemuth, J. (September 13, 2012). Impact of SuccessFactors Acquition on SAP's HCM strategy. Gartner Research, ID:G00235670.
Mandarin Oriental: Talent everywhere. (March 2010). HRM Asia, http://www.hrmasia.com/case-studies/mandarin-oriental-talent-everywhere/40527/, accessed March 25, 2013.
Schein, A. (2013). Mandarin Oriental International Limited. Hoover's Online, http://subscriber.hoovers.com/H/company360/overview.html?companyId=101774000000000, accessed March 25, 2013.
Otter, T., Freyemuth, J., & Hanscome, R. (March 14, 2013). Magic quadrant for talent management suites. Gartner Research, ID:G00227698.
SuccessFactors supports Mandarin Oriental Hotel Group global growth strategy. (2009). S. C. Study, http://www.successfactors.com/docs/Mandarin_CaseStudy_final_art_CRAIG_approved_JM_0121.pdf, accessed March 29, 2013.

E-PROJECT 1 CRM for Human Services Agencies

This e-project explores how human services agencies strive to improve customer relationship management capabilities.

Make a table like the one in Figure 5-26, and then visit the websites of those Departments of Human Services. Attempt to answer the questions for each site, but if you can't find the answer to a question within 3 minutes, enter "Not found."

http://www.oregon.gov/DHS/
http://www.dhr.georgia.gov/portal/site/DHS/
http://www.dhs.dc.gov/

5-23. How do you compare these departments in terms of how customer-centric their websites are for visitors with different goals?

5-24. What measures are these human services agencies taking to make it easier for people to obtain services that are designed for them?

5-25. In what ways could CRM help agencies improve services and reduce costs?

FIGURE 5-26
How customer-centric are human services agencies' websites?

	Oregon	Georgia	District of Columbia
How do I apply for food stamps?			
Where can I find the nearest homeless shelter?			
What services are available for deaf people?			

E-PROJECT 2 Evaluating Employment and Recruitment Websites

In this e-project, you will compare the major publicly accessible career management websites and test their capabilities.

Founded in 1995, Careerbuilder.com claims to be the largest online job site in the United States. A chief rival is Monster.com, which pioneered digital recruitment in 1994. Its parent company, Monster Worldwide, Inc., also offers similar services in other countries with local listings. Both companies earn revenue from fees charged to employers for posting jobs and searching through resumes for qualified candidates, and also from online advertising.

5-26. Visit each site and check out the "About Us" sections to better understand how the two companies differ. Compare and contrast their vision statements.

5-27. Imagine you are a hotel manager looking for a job in a major U.S. city of your choice. Compare the positions you find with Monster to those you find with Careerbuilder.

5-28. Now enter each site as though you are a human resources manager for a luxury hotel, and would like to post a job for hotel manager. Compare the various services and packages that each site offers employers. In which one would you choose to post your ad, and what factors led to your decision?