

SOLUTIONS MANUAL



Business Driven
INFORMATION SYSTEMS

SECOND EDITION

BALTZAN PHILLIPS

STRATEGIC DECISION MAKING

2 CHAPTER

Decision making and problem solving encompass large-scale, opportunity-oriented, strategically focused solutions. Students today must possess decision-making and problem-solving abilities to compete in the ebusiness world. Organizations today can no longer use a “cook book” approach to decision making. This chapter focuses on technology to help make decisions, solve problems, and find new innovative opportunities including:

- Decision support systems
- Executive information systems
- Artificial intelligence (AI)
- Data mining
- Business process improvement
- Business process reengineering
- Business process modeling
- Business process management

SECTION 2.1 - DECISION-MAKING SYSTEMS

- Decision Making
- Transaction Processing Systems
- Decision Support Systems
- Executive Information Systems

SECTION 2.2 - BUSINESS PROCESSES

- Understanding the Importance of Business Processes
- Business Process Improvement
- Business Process Reengineering
- Business Process Modeling
- Business Process Management

OPENING CASE – Additional Information

Second Life: Succeeding in Virtual Times

Second Life is a new venue for collaboration, training, distance learning, new media studies and marketing. Hold a virtual meeting with your sales managers located in Europe and Asia. You can present the new sales initiatives and discuss them with your team real-time.

<http://www.secondlife.com/>

The best way to kick start this case is to have your students interact with SecondLife. Use AYK Project 31: Creating an Avatar in SecondLife located at the back of the text. If you have a large lecture you can build an avatar and fly around SecondLife during your lecture to your students.

Classroom Exercise

I show my students a quick demo of Second Life and then break them into groups and ask them to create a strategy for a new virtual business for Second Life. They have great ideas including:

- Private Detective
- Retailer
- Sales Force Team
- Music distributor
- Architect
- Tutor
- Coffee Shop
- Hair Dresser
- Avatar Repairman

***For additional case information visit the MISForum where we are constantly posting updated material to enhance the business driven cases. You can self-register for the MISForum at www.mhhe.com/mis.

SECTION 2.1

DECISION-MAKING SYSTEMS

What is the value of information? The answer to this important question varies depending on how the information is used. Two people looking at the exact same pieces of information could extract completely different value from the information depending on the tools they are using to look at the information. This chapter discusses technologies that people can use to help make decisions and solve problems.

LEARNING OUTCOMES

2.1 Explain the difference between transactional information and analytical information. Be sure to provide an example of each.

Transactional information encompasses all of the information contained within a single business process or unit of work, and its primary purpose is to support the performing of daily operational tasks. Examples of transactional information include withdrawing cash from an ATM or making an airline reservation. Analytical information encompasses all organizational information, and its primary purpose is to support the performing of managerial analysis tasks. Examples of analytical information include trends, sales, and product statistics.

2.2 Define TPS, DSS, and EIS and explain how an organization can use these systems to make decisions and gain competitive advantages.

- Transaction processing system (TPS) - A transaction processing system (TPS) is the basic business system that serves the operational level (analysts) in an organization. The most common example of a TPS is an operational accounting system such as a payroll system or an order-entry system.
- Decision support system (DSS) – models information to support managers and business professionals during the decision-making process
- Executive information system (EIS) – a specialized DSS that supports senior level executives within the organization

Being able to sort, calculate, analyze, and slice-and-dice information is critical to an organization's success. Without knowing what is occurring throughout the organization there is no way that managers and executives can make solid decisions to support the business.

2.3 Describe the three quantitative models typically used by decision support systems.

1. Sensitivity analysis – the study of the impact that changes in one (or more) parts of the model have on other parts of the model
2. What-if analysis – checks the impact of a change in an assumption on the proposed solution
3. Goal-seeking analysis – finds the inputs necessary to achieve a goal

2.4 Describe the relationship between digital dashboards and executive information systems.

An executive information system (EIS) is a specialized DSS that supports senior level executives within the organization. A digital dashboard integrates information from multiple components and present it in a unified display. A digital dashboard is a form of EIS.

2.5 Identify the four types of artificial intelligence systems.

The four most common categories of AI include:

1. Expert systems – computerized advisory programs that imitate the reasoning processes of experts in solving difficult problems
2. Neural Networks – attempts to emulate the way the human brain works
3. Genetic algorithm - system that mimics the evolutionary, survival-of-the-fittest process to generate increasingly better solutions to a problem
4. Intelligent agents – special-purposed knowledge-based information system that accomplishes specific tasks on behalf of its users

CLASSROOM OPENER

GREAT BUSINESS DECISIONS – Walt Disney Decides to Call His Mouse Cartoon Character Mickey, not Mortimer

Sunday, November 18, 1928, is a historic moment in time since it is the day that the premier of *Steamboat Willie* debuted, a cinematic epic of seven minutes in length. This was the first cartoon that synchronized sound and action.

Like all great inventions, Mickey Mouse began his life in a garage. After going bankrupt with the failure of his Laugh O Gram Company, Walt Disney decided to rent a camera, assemble an animation stand, and set up a studio in his uncle's garage. At the age of 21, Walt and his older brother Roy launched the Disney Company in 1923. The company had a rocky start. Its first film, *Alice*, hardly made enough money to keep the company in business. His second film, *Oswald the Rabbit*, was released in 1927 with small fanfare. Then Disney's luck changed and in 1928 he released his seven minute film about a small mouse named Mickey. Disney never looked back.

The truth is Mickey Mouse began life as Mortimer Mouse. Walt Disney's wife, Lilly, did not like the name and suggested Mickey instead. Walt Disney has often been heard to say, "I hope we never lose sight of one fact – that this was all started by a mouse."

Would Mortimer have been as successful as Mickey? Would Mortimer have been more successful than Mickey? How could Walt Disney have used technology to help support his all-important decision to name his primary character? There are many new technologies helping to drive decision support systems, however it is important to note that some decisions, such as the name of a mouse, are made by the most complex decision support system available - the human brain.

CLASSROOM EXERCISE

Building Artificial Intelligence

The idea of robots and artificial intelligence is something that has captured people's attention for years. From the robots in Star Wars to the surreal computer world in the Matrix, everyone seems to be fascinated with the idea of robots.

Break your students into groups and challenge them to build a robot. The robot can perform any function or activity they choose. The robot must contain a digital dashboard and enable decision support capabilities for its owner. Have the students draw a prototype of their robot and present their robot to the class. Have your entire class vote on which robot they would invest in if they were a venture capital firm.

CLASSROOM EXERCISE

Great Example of DSS

The Analyst™ is a diagnostic tool, now accessible online, that fills the gap between what you need and what busy, human doctors can offer. With less and less time to address a patient's individual needs and yet more and more research and other information to digest, incorrect and incomplete diagnoses are frequently made. On this site they have a great diagram that compares The Analyst to a Doctor.

<http://www.diagnose-me.com/?page=dizz&gclid=C1bdzaP785ECFQwcawodfCXpxA>

CLASSROOM EXERCISE

Hod Lipson Demonstrates Cool Little Robots

Hod Lipson demonstrates a few of his cool little robots, which have the ability to learn, understand themselves and even self-replicate. At the root of this uncanny demo is a deep inquiry into the nature of how humans and living beings learn and evolve, and how we might harness these processes to make things that learn and evolve.

Hod Lipson works at the intersection of engineering and biology, studying robots and the way they "behave" and evolve. His work has exciting implications for design and manufacturing -- and serves as a window to understand our own behavior and evolution.

<http://www.ted.com/index.php/talks/view/id/165>

CLASSROOM EXERCISE

Take a Drive or a Walk

This is an interesting website where you can view yourself walking or driving down street in San Francisco or Seattle. I use this as a decision support tool to use to map a tour if I was planning a trip to one of these cities.

<http://preview.local.live.com/>

CLASSROOM VIDEO

Something to Get Their Attention

Great clip to show student's the power of AI.

http://www.metacafe.com/watch/445498/robotic_beer_launching_refrigerator

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CORE MATERIAL

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OPENING CASE QUESTIONS

Second Life

1. How could companies use Second Life for new product or service decision making?

By gaining feedback on the product or service from Second Life. Many companies are using Second Life to pilot virtual products. In the American Apparel store you can view clothes that are at the real store. Auto manufacturers are using Second Life to allow customers to tour virtual cars. Universities are even using Second Life to offer virtual campus tours and information. The possibilities are endless, and far less expensive than testing products in the real world, with far more diverse customers available on Second Life.

2. How could financial companies use neural networks in Second Life to help their businesses?

A neural network, also called an artificial neural network, is a category of AI that attempts to emulate the way the human brain works. The types of decisions for which neural networks are most useful are those that involve pattern or image recognition because a neural network can learn from the information it processes.

Neural networks analyze large quantities of information to establish patterns and characteristics in situations where the logic or rules are unknown. The finance industry is a veteran in neural network technology and has been relying on various forms of it for over two decades. The industry uses neural networks to review loan applications and create patterns or profiles of applications that fall into two categories: approved or denied. One neural network has become the standard for detecting credit card fraud. Since 1992, this technology has slashed fraud by 70 percent for U.S. Bancorp. Now, even small credit unions are required to use the software in order to qualify for debit-card insurance from Credit Union National Association.

Additional examples of neural networks include:

- Citibank uses neural networks to find opportunities in financial markets. By carefully examining historical stock market data with neural network software, Citibank financial managers learn of interesting coincidences or small anomalies (called market inefficiencies). For example, it could be that whenever IBM stock goes up, so does Unisys stock. Or it might be that a U.S. Treasury note is selling for 1 cent less in Japan than it is in the United States. These snippets of information can make a big difference to Citibank's bottom line in a very competitive financial market.
- In Westminster, California, a community of 87,000 people, police use neural network software to fight crime. With crime reports as input, the system detects and maps local crime patterns. Police say that with this system they can better predict crime trends, improve patrol assignments, and develop better crime prevention programs.
- Fingerhut, the mail-order company based in Minnesota, has 6 million people on its customer list. To determine which customers were and were not likely to order from its catalog, Fingerhut recently switched to neural network software. The company finds that the new software is more effective and expects to generate millions of dollars by fine-tuning its mailing lists.
- Fraud detection widely uses neural networks. Visa, MasterCard, and many other credit card companies use a neural network to spot peculiarities in individual accounts. MasterCard estimates neural networks save it \$50 million annually.
- Many insurance companies (Cigna, AIG, Travelers, Liberty Mutual, Hartford) along with state compensation funds and other carriers use neural network software to identify fraud. The system searches for patterns in billing charges, laboratory tests, and frequency of office visits. A claim for which the diagnosis was a sprained ankle but included an electrocardiogram would be flagged for the account manager.
- FleetBoston Financial Corporation uses a neural network to watch transactions with customers. The neural network can detect patterns that may indicate a customer's growing dissatisfaction with the company. The neural network looks for signs like decreases in the number of transactions or in the account balance of one of FleetBoston's high-value customers.

Neural networks' many features include:

- Learning and adjusting to new circumstances on their own.
- Lending themselves to massive parallel processing.
- Functioning without complete or well-structured information.

3. How could a company such as Nike use decision support systems on Second Life to help its business?

A decision support system (DSS) models information to support managers and business professionals during the decision-making process. Three quantitative models are typically used by DSSs: (1) sensitivity analysis, (2) what-if analysis, and (3) goal-seeking analysis. Nike could use any of these three types of models to help its business. By asking questions to Second Life customers it could run these models to help it make business decisions.

- Sensitivity analysis is the study of the impact that changes in one (or more) parts of the model have on other parts of the model. Users change the value of one variable repeatedly and observe the resulting changes in other variables.
- What-if analysis checks the impact of a change in an assumption on the proposed solution. For example, "What will happen to the supply chain if a hurricane in South Carolina reduces holding inventory from 30 percent to 10 percent?" Users repeat this analysis until they understand all the effects of various situations.
- Goal-seeking analysis finds the inputs necessary to achieve a goal such as a desired level of output. Instead of observing how changes in a variable affect other variables as in what-if analysis, goal-seeking analysis sets a target value (a goal) for a variable and then repeatedly changes other variables until the target value is achieved. For example, "How many customers are required to purchase our new product line to increase gross profits to \$5 million?"

4. How could an apparel company use Second Life to build a digital dashboard to monitor virtual operations?

A common feature of an executive information system is a digital dashboard. Digital dashboards integrate information from multiple components and tailor the information to individual preferences. Digital dashboards commonly use indicators to help executives quickly identify the status of key information or critical success factors. A company could build a digital dashboard on Second Life to monitor a virtual store. It could track and monitor everything that it could track in a real store including:

- Number of customers
- Types of customers
- Time spent in store
- Number of items avatar looked at in the store
- Number of interactions with store avatars
- Number of items purchased
- Revenue per sale

SECTION 2.2

BUSINESS PROCESS

LEARNING OUTCOMES

1. **Describe business processes and their importance to an organization.**

A **business process** is a standardized set of activities that accomplish a specific task, such as processing a customer's order. Business processes transform a set of inputs into a set of outputs (goods or services) for another person or process by using people and tools. Without processes organizations would not be able to complete activities.

2. **Differentiate between customer facing processes and business facing processes.**

Customer facing processes result in a product or service that is received by an organization's external customer. **Business facing processes** are invisible to the external customer but essential to the effective management of the business and include goal setting, day-to-day planning, performance feedback, rewards, and resource allocation.

3. **Compare business process improvement and business process reengineering.**

Many organizations began business process improvement with a continuous improvement model. **Business process improvement** attempts to understand and measure the current process, and make performance improvements accordingly. **Business process reengineering (BPR)** is the analysis and redesign of workflow within and between enterprises. BPR relies on a different school of thought than business process improvement. In the extreme, BPR assumes the current process is irrelevant, does not work, or is broken and must be overhauled from scratch. Such a clean slate enables business process designers to disassociate themselves from today's process and focus on a new process. It is like the designers projecting themselves into the future and asking: What should the process look like? What do customers want it to look like? What do other employees want it to look like? How do best-in-class companies do it? How can new technology facilitate the process?

4. **Describe the importance of business process modeling (or mapping) and business process models.**

Business process modeling (or mapping) is the activity of creating a detailed flow chart or process map of a work process showing its inputs, tasks, and activities, in a structured sequence. A **business process model** is a graphic description of a process, showing the sequence of process tasks, which is developed for a specific purpose and from a selected viewpoint. A set of one or more process models details the many functions of a system or subject area with graphics and text and its purpose is to:

- Expose process detail gradually and in a controlled manner
- Encourage conciseness and accuracy in describing the process model
- Focus attention on the process model interfaces
- Provide a powerful process analysis and consistent design vocabulary

5. **Explain business process management along with the reason for its importance to an organization.**

The latest area to discover the power of technology in automating and reengineering business process is business process management. Business process management (BPM) integrates all of an organization's

business process to make individual processes more efficient. BPM can be used to solve a single glitch or to create one unifying system to consolidate a myriad of processes. Many organizations are unhappy with their current mix of software applications and dealing with business processes that are subject to constant change. These organizations are turning to BPM systems that can flexibly automate their processes and glue their enterprise applications together.

CLASSROOM OPENER

Cable Ready

A current cable subscriber calls up to change the date for activating the service at a new address from Feb. 22 to March 1. The subscriber is successful and hangs up the phone happy. However, on February 22nd the cable at the current home is disconnected and the customer is no longer happy. The customer service representative forgot to change the date of the disconnection and only changed the date of the activation.

Practically speaking, these two events will almost always be linked - and the system probably should have prompted the customer service representative to ask if they were. The point: In focusing on business process, it is important to facilitate real-world tasks that are, by nature, "integrated."

CLASSROOM EXERCISE

Examining And Reengineering A College Business Process

Ask your students to discuss issues they have encountered around the college due to an inefficient or ineffective process. Choose one of the processes, break your students into groups, and ask them to reengineer the process. How would they change it to make it more effective or more efficient? Would they add a new technology device to help with the process such as a scanner, PDA, or RFID? Be sure to have them diagram the As-Is process and the To-Be process. Have them present their reengineered processes to the class.

CLASSROOM EXERCISE

Reengineering a Process

There is nothing more frustrated than a broken process. Ask your students to break into groups and discuss examples of broken processes that are currently causing them pain. The process can be a university process, mail-order process, Internet-order process, return merchandise process, etc. Ask your students to agree on one of the broken processes and to reengineer the process. Students should diagram the "As-Is" process and then diagram their "To-Be" process. Bring in a large roll of brown package wrapping paper and masking tape. Give each group two large pieces of the paper and ask them to tape the paper to the wall. These make for great "As-Is" and "To-Be" process maps.

CLASSROOM EXERCISE

Additional Columbia Sportswear Case Study

Here is a great case study on BPM. I use the Columbia Sportswear case study <http://www.microsoft.com/business/peopleready/business/operations/default.aspx>. This is actually a great site for all kinds of BPM information.

CLASSROOM EXERCISE

Videos on BPM

Microsoft's business and industry offers a surprisingly good introduction to people driving business success through business process.

http://www.microsoft.com/business/peopleready/operations/default.aspx?WT.mc_id=KWF

Here are some good client videos on BPM. Gives a nice real world perspective: K2 and Siemens.

<http://www.microsoft.com/biztalk/solutions/bpm/default.aspx>

Funny video to kick-off your process modeling lecture.

<http://www.youtube.com/watch?v=S-Mbr31f2dg>

CLASSROOM EXERCISE

Staple Yourself to an Order

This is an HBR classic. If you are covering Business Process in your course you might want to include this case.

The case can be found at:

http://harvardbusinessonline.hbsp.harvard.edu/b02/en/common/item_detail.jhtml;jsessionid=02C12X2YLVQ1GAKRGWDR5VQBKE0YIISW?id=2963

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OPENING CASE QUESTIONS

Second Life

5. How could a company use Second life to revamp its customer service process?

By gaining feedback on the product or service from Second Life. Many companies are using Second Life to pilot virtual products. In the American Apparel store you can view clothes that are at the real store and organize how the store works best for customers, without the cost of surveys, store visits, store changes, and inventory changes. By operating in a virtual world you can change the virtual inventory in minutes and determine customer interaction instantaneously. With a virtual world you will not experience any of the problems we have in the real world with travel. A trip to Japan, China, or Australia can cost a company thousands and thousands of dollars in airfare, hotels, taxis, food, etc. Not to mention employee time. By visiting customers in Second Life you can have a one-on-one or group conversation with people from all over the globe without leaving your office. Second Life will help flatten the world and make everyone next door neighbors (just as Freidman discussed in The World is Flat).

6. How could a company use Second Life to revamp its order entry process?

Forming relationships with customers, partners, and employees in a virtual world is different than relationships in the real world. Operating in a virtual world has many similarities and differences from operating in the real world. In a virtual world you will be operating with many different types of customers who look different from real customers. Here is an excellent article on How Second Life Changes Customer Service

http://www.businessweek.com/globalbiz/content/apr2007/gb20070410_481047.htm?campaign_id=rss_tech

The virtual world could become the first point of contact between companies and customers and could transform the whole experience

Web 2.0 is still the hottest buzzword in tech circles, with every big brand worth its salt rushing to open a headquarters in Second Life or build its own MySpace page. But beyond showing off some fancy programming, a handful of companies are already looking at the latest wave of technologies to explore whether user-generated content could be the next frontier in customer service.

Since it began hosting the likes of Adidas, Dell, Reuters and Toyota, Second Life has become technology's equivalent of India or China - everyone needs an office and a strategy involving it to keep their shareholders happy. But beyond opening a shiny new building in the virtual world, what can such companies do with their remote real estate?

Rather than a simple showcase, some believe Second Life could one day become a first point of contact for customers.

Like many other big brands, PA Consulting has its own offices in Second Life and has learnt that simply having an office to answer customer queries is not enough. Real people, albeit behind avatars, must be staffing the offices - in the same way having a website is not enough if there isn't a call centre to back it up when a would-be customer wants to speak to a human being. In future, the consultants believe call centers could one day ask customers to follow up a phone call with them by moving the query into a virtual world.

And hanging around in Second Life is more fun than being stuck on hold. As Claus Nehmzow, member of PA Consulting's management team points out: "The waiting period can be so much more entertaining than with an IVR system".

Instead of being placed in a queue to enjoy hold 'muzak' when contacting a call centre, virtual world visitors could make more profitable use of their time - talking to other inhabitants, viewing videos, reading information in the environment for example.

As well as keeping visitors entertained, exploring virtual world customer service can have advantages for the company themselves.

By using avatars, for example, a whole new customer services workforce can be opened up - those who need to work from home or mothers with young children for example, can be brought back into the virtual workforce. It can also remove some of the issues with customers being prejudiced against call centre workers who have certain accents.

However, currently Second Life and its imitators remain relatively niche in usage terms and have their own technology boundaries - not all consumers, particularly the older community, have the tech savvy or indeed the hardware necessary to make use of virtual worlds.

It may yet be some time before these cyber worlds come into their own - yet other web 2.0 technologies may offer another route for companies to make conversations with their customers easier.

Clive Longbottom, of analyst house Quocirca, believes the relatively low penetration rates and end user technical constraints will keep virtual worlds as a relatively niche customer service tool: "It's a new environment, there's a lot of interest... but it's not growing rapidly, it's not a major area."

He added that more established web 2.0 favorites such as YouTube might be able to play a better part in resolving customer queries. Examples might be electronics vendors posting a software demo or a video of how to set up a tricky audio system.

Some companies have already cottoned on to the potential of user-generated content and have begun milking users for their expertise in problem solving - Sony is one, having recently got users to help solve glitches after the recent launch of the PS3. Sony has built customer self-service forums using Transversal software to allow the PS3-puzzled to query each other.

Andy Barker, director of customer services for Sony UK, told silicon.com the hardware maker will be relying on PS3 fans to help each other out, although the forums will have some Sony brains on hand too.

We can't know how every single device works with the PS3 but users could have some experience of it. If someone suggested they put the PS3 in a slow cooker, we'd step in and moderate that. There will also be classic moderating if someone posts an offensive comment or a dodgy link."

Sony recently opened its own virtual world, Sony@home, and is looking into the possibility of exploiting it for customer service purposes, perhaps using it to one day give users graphical walkthroughs if they need customer support. Barker said: "It's a question of seeing if people like it and if it's something they use but that's looking a bit further in the future."

Meanwhile, others are exploring how user-generated content from mobile phones can be used for customer service purposes.

In Accenture's US labs, some researchers are already working on how customers and companies can make each other's lives easier by means of the humble cameraphone. The consultants have already explored how snap-happy citizens can use their phones to take photos of minor crimes such as fly-tipping or graffiti and MMS them to the police.

Andy Fano, global director of research, Accenture Technology Labs, told silicon.com the system has to-date just been piloted in the US. He added: "We came from the position that it would only be a matter of time until people captured an event on their phones, and wanted to send it to the police, who wouldn't be able to receive it."

Insurance companies could also make use of the feature-stuffed mobile - after a disaster, homeowners could take pictures of their homes as primary assessment of damage and help insurance agents and emergency services determine who needs help first.

With the addition of image recognition tech, the capacities of mobiles could be extended. Consumers could take pictures of a broken car part, for instance, and text it to the manufacturer to request a replacement.

However, with a brave new world of new media customer services, call centers will need an overhaul. Fano said: "By necessity, it will take more people to interpret all of this but given the potential mass of media coming in, we have to find a scalable way to approach this."

7. How could a company use Second Life to reinvent relationships with customers, partners, and employees?

Second Life can help cement customer, partner, and employee relationships by improving organizational business processes and making them more intelligent. This is achieved by understanding customer behavior and preferences, partner behavior and preference, and employee behavior and preferences, then realigning product and service offerings and related communications to make sure they are synchronized with customer needs and preferences. If you do not know and understand your customers, partners, and employees then they might not be working with you for long!

New World of Opportunity: Ask your students why Second Life Grid is monumental to businesses such as IBM who just started the first Grid.

The Second Life Grid™ platform enables your organization to create a public or private space using the leading 3D online virtual world technology behind Second Life™. Discover how your organization can create its own space for communication, collaboration and community engagement:

- Hold in-person meetings without leaving the office, using real-time 3D collaboration
- Construct product simulations enabling customers from all over the world to test out new designs and concepts
- Conduct employee training
- Meet with global partners at your virtual headquarters
- Receive product feedback from clients
- As a non-profit, engage and raise funds
- Build community around your brand
- <http://secondlifegrid.net/>

CHAPTER TWO

CLOSING MATERIAL

CLOSING CASE ONE

Defense Advanced Research Projects Agency (DARPA) Grand Challenge

1. How is the DoD using AI to improve its operations and save lives?

The DARPA Grand Challenge was designed to leverage American ingenuity to develop autonomous vehicle technologies that can be used by the military. Using AI driven vehicles the DOD will be able to send vehicles into dangerous situations without endangering any soldiers.

2. Why would the DoD use an event, such as the DARPA Grand Challenge, to further technological innovation?

By offering a generous prize, along with notoriety the DOD is able to get many of the greatest minds in the country working on creating autonomous vehicles. It is a win-win. The DOD receives the technology and the winning team receives a prize and notoriety.

3. Describe how autonomous vehicles could be used by organizations around the world to improve business efficiency and effectiveness.

There are numerous ways that autonomous vehicles could be used around by businesses from making deliveries, transporting goods and services to taking employees to and from the airport. The uses are limitless.

4. The Ansari X is another technological innovation competition focusing on spacecraft. To win the \$10 million Ansari X Prize, a private spacecraft had to be the first to carry the weight equivalent of three people to an altitude of 62.14 miles twice within two weeks. SpaceShipOne, a privately built spacecraft, won the \$10 million Ansari X Prize on October 4, 2004. Describe the potential business impacts of the Ansari X competition.

Space travel is the next exciting frontier. Business impacts could range from vacation trips to the moon to picking up space materials for the production of goods and services. The competition could also inspire other types of competition such as underwater houses and personal flying machines.

DARPA Videos

The DARPA challenge is an excellent topic when discussing AI. Here is the latest article on this year's DARPA challenge.

- Robots And Their Masters Ready For DARPA 'War Zone' Race
<http://www.informationweek.com/showArticle.jhtml;jsessionid=THMMTXP1BKGD IQSNDLRCKH0CJUNN2JVN?articleID=193401499&queryText=aug+14>
- DARPA Grand Challenge Stanford Winning Team
http://reviews.cnet.com/4660-11443_7-6358785.html?tag=vid.1
- DARPA Challenge - 2005 Overview
http://reviews.cnet.com/4660-11443_7-6353439.html?tag=vid.2

- Special Features: Inside the DARPA Challenge
http://reviews.cnet.com/4660-11443_7-6358769.html?tag=vid.3

CLOSING CASE TWO

Revving Up Sales at Harley Davidson

1. How does Talon help Harley-Davidson employees improve their decision-making capabilities?

Talon is Harley-Davidson's proprietary dealer management system. Talon handles inventory, vehicle registration, warranties, and point-of-sale transactions for all of Harley-Davidson's dealerships. The system helps improve decision-making capabilities by offering an enterprisewide view of operations, sales, and expenses. The system automatically generates part orders, taking much of the guesswork out of replenishment. Most significantly, the system allows the company to review and analyze information across its global organization giving it a 360-degree view into enterprisewide information that supports strategic goal setting and decision making throughout all levels of the organization.

2. Identify a few key metrics a Harley-Davidson marketing executive might want to monitor on a digital dashboard.

An executive information system (EIS) is a specialized DSS that supports senior level executives within the organization. A digital dashboard integrates information from multiple components and presents it in a unified display. A digital dashboard is a form of EIS. Harley-Davidson could help its executives gain access to greater amounts and details of enterprisewide information through a digital dashboard. According to Nucleus Research, there is a direct correlation between use of digital dashboards and a companies' return on investment (ROI), hence Harley-Davidson could increase its ROI through a digital dashboard running on an EIS. Key metrics could include:

- Best selling product
- Worst selling product
- Date of highest sales per month
- Date of worst sales per month
- Correlation between product sales
- Online orders verses in-store purchases
- Sales by region
- Sales by season

3. How can Harley-Davidson benefit from using decision support systems in its business?

An executive information system (EIS) is a specialized DSS that supports senior level executives within the organization. A digital dashboard integrates information from multiple components and presents it in a unified display. A digital dashboard is a form of EIS. Harley-Davidson could help its executives gain access to greater amounts and details of enterprisewide information through a digital dashboard. According to Nucleus Research, there is a direct correlation between use of digital dashboards and a companies' return on investment (ROI), hence REI could increase its ROI through a digital dashboard running on an EIS.

4. How can Harley-Davidson use business process improvement to increase customer satisfaction?

Business process improvement attempts to understand and measure the current process and make performance improvements accordingly. Harley-Davidson could use business process improvement to continuously improve the efficiency and effectiveness of its business. If the company measured current processes and found problems they could quickly implement changes to improve operations enterprisewide.

5. How can Harley-Davidson use business process reengineering to improve its supplier relationships?

This is similar to business process improvement except the company would want to strive to reinvent the process instead of just trying to improve the current process for efficiency and effectiveness. For example, instead of improving how supplier shipments are brought into the warehouse they might go to the supplier site and change how the inventory is shipped including containers, parts, information, etc. This would change the entire process, not just improve the current process.

CLOSING CASE THREE

Delta Airlines Plays Catch-Up

1. What business risks would Delta be taking if it decided not to catch up with industry leaders in using IT to gain a competitive advantage?

Delta would fall behind the industry and its customer expectations. If Delta's business processes were significantly inefficient and ineffective compared with its competitors, it would lose business. Airline customers are typically operating under time constraints and pressures to catch flights and connections, and they do not want to be inconvenienced by inefficient and ineffective business processes.

2. What competitive advantages can an airline gain by using DSS and EIS?

An airline can use both DSSs and EISs to uncover areas where the company can create competitive advantages and perhaps first-mover advantages such as self-check in and printing boarding passes from home. First-mover advantages can be enormous and place an organization in the position to significantly impact its market share. A fast follower can also increase its market share by tagging onto the first-movers ideas. It also has the advantage of avoiding some of the mistakes or pitfalls that the first-mover might have made. Of course, a fast follower will only obtain a temporary advantage as many competitors will begin to implement the innovative IT system.

3. What other industries could potentially benefit from the use of yield management systems?

Almost all industries could benefit from the use of a yield management system. Potential answers include other transportation industries such as trains, trucks, and buses, health care industry for doctor visits, and even the telecommunications industry for shared modem services.

4. How can American and United use customer information to gain a competitive?

Both airlines used their innovative IT systems to gain valuable business intelligence into their customer information. They conceived and rolled out hugely successful frequent flyer programs, which increased the likelihood that frequent business travelers, their most profitable customers, would fly with them instead of with a competitor. Frequent flyer programs require sophisticated computer system to properly account for and manage the flight activity of millions of customers. Ultimately, frequent flyer programs became an entry barrier for the industry because all airline companies felt they could not compete for the best customers without having their own frequent flyer systems.

5. What types of metrics would Delta executives want to see in a digital dashboard?

Delta could use throughput and speed efficiency metrics to baseline and benchmark its gate and boarding applications. It could also use usability and customer satisfaction effectiveness metrics to determine the satisfaction in its gate and boarding applications. The dashboard could also contain information on market pulse, customer service, and cost drivers. It should also allow for sensitivity analysis, what-if analysis, and goal-seeking analysis.

MAKING BUSINESS DECISIONS

Instructor Note: There are few right or wrong answers in the business world. There are really 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. MAKING DECISIONS

Project Purpose: To understand benefits and risks of decision making

Potential Solution: The biggest benefit of a good decision is the ability to provide a solid solution to a business problem. The biggest risk of a bad decision is increased cost, wasted time, and a failed business. Student's reports should highlight how information technology can enable them to make better decisions.

2. DSS AND EIS

Project Purpose: To understand the value gained by using decision-support tools.

Potential Solution: Dr. Rosen can use DSS systems to model all of the organizational information to support or reject his purchase decision. Dr. Rosen can use sensitivity analysis to study of the impact that changes in buying the new business will have on his current business. He can use what-if analysis to understand how economic conditions, professional reputation, and other competitors might affect his business in the future. He can use goal-seeking analysis to determine how much revenues will have to increase to offset the cost of the purchase.

3. FINDING INFORMATION ON DECISION SUPPORT SYSTEMS

Project Purpose: Finding additional information on DSSs.

Potential Solution: Student answers to this question will vary depending on which systems they research on the Internet. In general, their presentation should focus on how a DSS can help grow a small to medium sized business. Be sure your students answer what types of DSS systems are available for a small business, how they can be used in a small business, and the cost associated with the different DSS systems.

APPLY YOUR KNOWLEDGE

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AYK 1: Discovering Reengineering Opportunities

This assignment will change depending on how each school performs tuition payments and registering for classes. Just ensure each student presents As Is and To Be process diagrams clearly demonstrating how the new process will increase efficiency and effectiveness in the process. Broken, redundant, and antiquated processes can cause tremendous business inefficiencies. Your students should be able to easily identify which processes in your class registration system are broken, redundant, and antiquated since they are intimately familiar with this system. Since all colleges use different class registration systems the answer to this question will

vary. The important part is to ensure they are identifying the issues along with suggestions for new ways to improve the process and fix the broken, redundant, and antiquated processes.

AYK 2: Dashboard Design

The importance of this activity is to get your students thinking about each category and its importance to the company. Each category should be displayed with metrics to measure the indicator such as Green, Yellow, and Red status indicators or percentages or levels. This is the critical part of the activity - displaying how the dashboard is going to measure each indicator. For example:

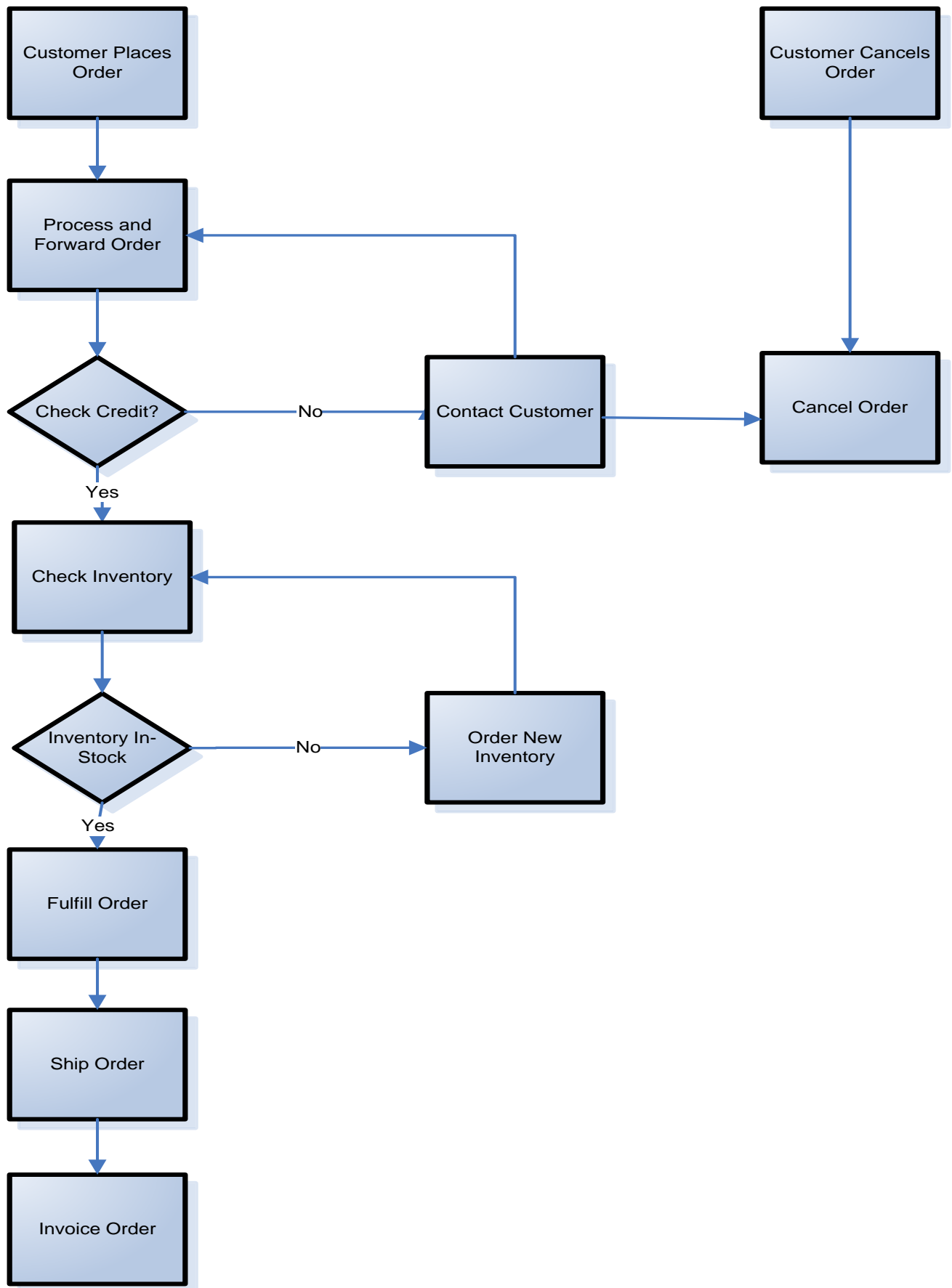
- Customers: satisfaction levels (red, green, yellow), number of customers, number of lost customers, number of new customers, order level per customers
- Marketing: campaign success, coupon success, new product launch success
- Sales: total sales, sales per quarter, sales comparatives, competitor sales comparatives, sales quota levels, sales representatives, sales per customer, sales per region
- Customer service: satisfaction, average time to resolve issues, metrics on call center, metrics on customer service representatives
- Billing: average collection period, outstanding bills, time to generate bills, customers in arrears
- Accounting: Total assets, total liabilities, net income
- Finance: ROI, ROA, IRR, NPV
- Logistics: Time for delivery, cost per delivery, lost orders due to failure to deliver, supplier metrics
- Human resources: Average days absent, average days sick, average days vacation, turnover

AYK 3: Modeling a Business Process

Student answers to this question will vary depending on the process they have chosen to fix. Review the chapter for an example of an improved burger ordering process. Students can choose any process from reorganizing a sock drawer, making coffee, to revamping the way gas is purchased for an automobile.

AYK 4: Revamping Business Process

The answer to this problem will vary, a sample answer appears below.



AYK 5: Revamping Accounts

A key advantage of technology is its ability to improve business processes. Working faster and smarter has become a necessity for companies. Initial emphasis was given to areas such as production, accounting, procurement, and logistics. The next big areas to discover technology's value in business process were sales and marketing automation, customer relationship management, and supplier relationship management. Some of these processes involve several departments of the company and some are the result of real-time interaction of the company with its suppliers, customers, and other business partners. The latest area to discover the power of technology in automating and reengineering business process is business process management. Business process management (BPM) integrates all of an organization's business process to make individual processes more efficient. BPM can be used to solve a single glitch or to create one unifying system to consolidate a myriad of processes.

Many organizations are unhappy with their current mix of software applications and dealing with business processes that are subject to constant change. These organizations are turning to BPM systems that can flexibly automate their processes and glue their enterprise applications together. BPM technologies effectively track and orchestrate the business process. BPM can automate tasks involving information from multiple systems, with rules to define the sequence in which the tasks are performed as well as responsibilities, conditions, and other aspects of the process. BPM not only allows a business process to be executed more efficiently, but it also provides the tools to measure performance and identify opportunities for improvement - as well as to easily make changes in processes to act upon those opportunities such as:

- Bringing processes, people, and information together
- Identifying the business processes is relatively easy. Breaking down the barriers between business areas and finding owners for the processes are difficult
- Managing business processes within the enterprise and outside the enterprise with suppliers, business partners, and customers
- Looking at automation horizontally instead of vertically

AYK 6: Groove City Process

This is a great project to help your students understand process and process flow for efficiency and effectiveness. Students may not have access to Visio or any other drawing program, but if they do have them redraw their solution in a tool. At the very least students should be able to identify the inefficiencies of ordering food and beverage and picking up their items all at different spots. To streamline the ordering, picking up, and payment process students should identify the following:

- One area for ordering food, beverage and, payment. This area should not be located right next to the door (leave this space for the pickup area).
- One area for picking up food, beverage, and accessory items (cream, sugar, napkins, etc).
- This area should be close to the door to allow those who are taking out orders to exit quickly.