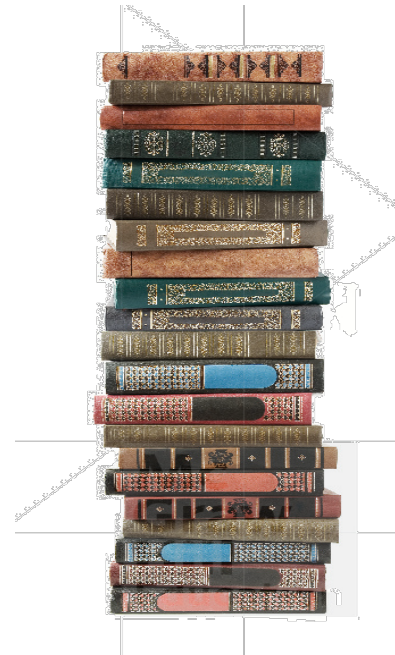


# COMPETING IN THE INFORMATION AGE <sup>2</sup>

- **Fact**—The confirmation or validation of an event or object
- **Information age**—A time infinite quantities of facts are widely available to anyone who can use a computer



# COMPETING IN THE INFORMATION AGE <sup>3</sup>

Examples of the power of business and technology

- **Amazon**—Original business focus was to sell books
- **Netflix**—Original business focus was to rent videos via mailboxes
- **Zappos**—Original business focus was to sell shoes



# COMPETING IN THE INFORMATION AGE <sup>4</sup>

- **Internet of Things (IoT)**—A world where interconnected internet-enabled devices or “things” have the ability to collect and share data without human intervention
- **Machine-to-Machine (M2M)**—Refers to devices that connect directly to other devices



# COMPETING IN THE INFORMATION AGE <sup>5</sup>

The core drivers of the information age

- Data
- Information
- Business intelligence
- Knowledge



# DATA <sub>1</sub>

**Data**—Raw facts that describe the characteristics of an event or object

**Big data**—A collection of large, complex data sets, which cannot be analyzed using traditional database methods and tools

- **Variety**
- **Veracity**
- **Volume**
- **Velocity**



# DATA <sub>2</sub>

**Structured data**—Has a defined length, type, and format and includes numbers, dates, or strings such as Customer Address format

- **Machine-generated data**
- **Human-generated data**



# DATA <sub>3</sub>

**Unstructured data**—Not defined, does not follow a specified format, and is typically free-form text, such as emails, Twitter tweets, and text messages

- **Machine-generated unstructured data**
- **Human-generated unstructured data**



# DATA <sub>4</sub>

## STRUCTURED DATA

Sensor data  
Weblog data  
Financial data  
Click-stream data  
Point of sale data  
Accounting data

## UNSTRUCTURED DATA

Satellite images  
Photographic data  
Video data  
Social media data  
Text message  
Voice mail data



# DATA <sub>5</sub>

- A fundamental role of all business managers is to be able to take the data and analyze it to find information to make great business decisions

Order Date	Customer	Sales Representative	Product	Qty	Unit Price	Total Sales	Unit Cost	Total Cost	Profit
4-Jan	Walmart	PJ Helgoth	Doritos	41	\$24	\$ 984	\$18	\$738	\$246
4-Jan	Walmart	Roberta Cross	Ruffles	90	\$15	\$1,350	\$10	\$900	\$450
5-Jan	Safeway	Craig Schultz	Ruffles	27	\$15	\$ 405	\$10	\$270	\$135
6-Jan	Walmart	Roberta Cross	Ruffles	67	\$15	\$1,005	\$10	\$670	\$335
7-Jan	7-Eleven	Craig Schultz	Pringles	79	\$12	\$ 948	\$ 6	\$474	\$474
7-Jan	Walmart	Roberta Cross	Ruffles	52	\$15	\$ 780	\$10	\$520	\$260
8-Jan	Kroger	Craig Schultz	Ruffles	39	\$15	\$ 585	\$10	\$390	\$195
9-Jan	Walmart	Craig Schultz	Ruffles	66	\$15	\$ 990	\$10	\$660	\$330
10-Jan	Target	Craig Schultz	Ruffles	40	\$15	\$ 600	\$10	\$400	\$200
11-Jan	Walmart	Craig Schultz	Ruffles	71	\$15	\$1,065	\$10	\$710	\$355

# INFORMATION 1

- **Information**—Data converted into a meaningful and useful context

Tony's Business Information	Name	Total Profit
Who is Tony's best customer by total sales?	Walmart	\$ 560,789
Who is Tony's least-valuable customer by total sales?	Walgreens	\$ 45,673
Who is Tony's best customer by profit?	7-Eleven	\$ 324,550
Who is Tony's least-valuable customer by profit?	King Soopers	\$ 23,908
What is Tony's best-selling product by total sales?	Ruffles	\$ 232,500
What is Tony's weakest-selling product by total sales?	Pringles	\$ 54,890
What is Tony's best-selling product by profit?	Tostitos	\$ 13,050
What is Tony's weakest-selling product by profit?	Pringles	\$ 23,000
Who is Tony's best sales representative by profit?	R. Cross	\$1,230,980

# INFORMATION <sub>2</sub>

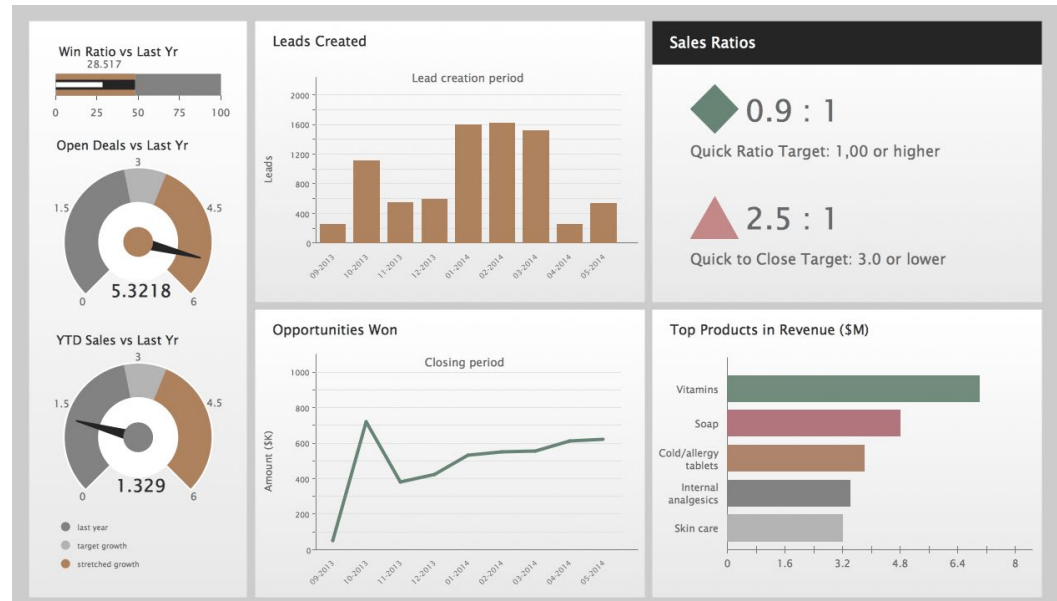
**Report**—A document containing data organized in a table, matrix, or graphical format allowing users to easily comprehend and understand information

- **Dynamic report**
- **Static report**



# BUSINESS INTELLIGENCE 1

- Business intelligence—**  
 Information collected from multiple sources such as suppliers, customers, competitors, partners, and industries that analyzes patterns, trends, and relationships for strategic decision making



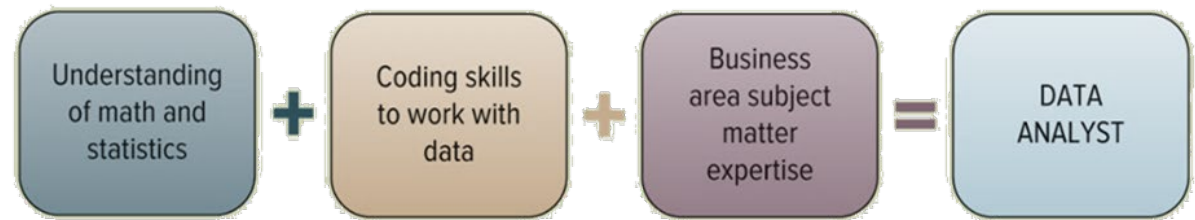
# BUSINESS INTELLIGENCE <sub>2</sub>



- **Data analyst**—Collects, queries, and consumes organizational data to uncover patterns and provide insights for strategic business decision making
- **Data scientist**—Extracts knowledge from data by performing statistical analysis, data mining, and advanced analytics on big data to identify trends, market changes, and other relevant information

# BUSINESS INTELLIGENCE <sub>3</sub>

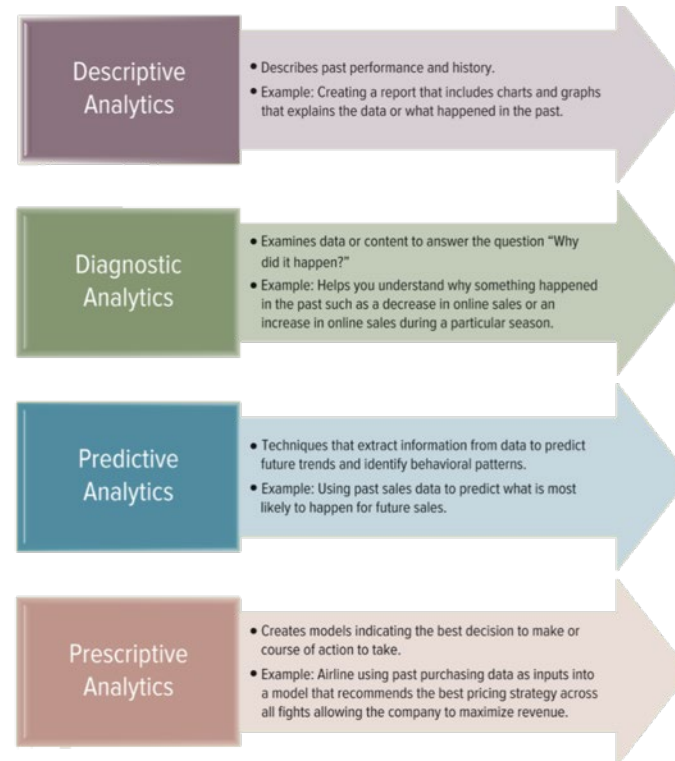
- Three key skills for a data analyst



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# BUSINESS INTELLIGENCE 4

- Four categories of analytics



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# KNOWLEDGE <sub>1</sub>



- **Knowledge**—Skills, experience, and expertise coupled with information and intelligence that creates a person's intellectual resources
- **Knowledge assets**
- **Knowledge facilitators**
- **Knowledge worker**



## KNOWLEDGE <sub>2</sub>

- The transformation from data to knowledge

**DATA:** I have one item.

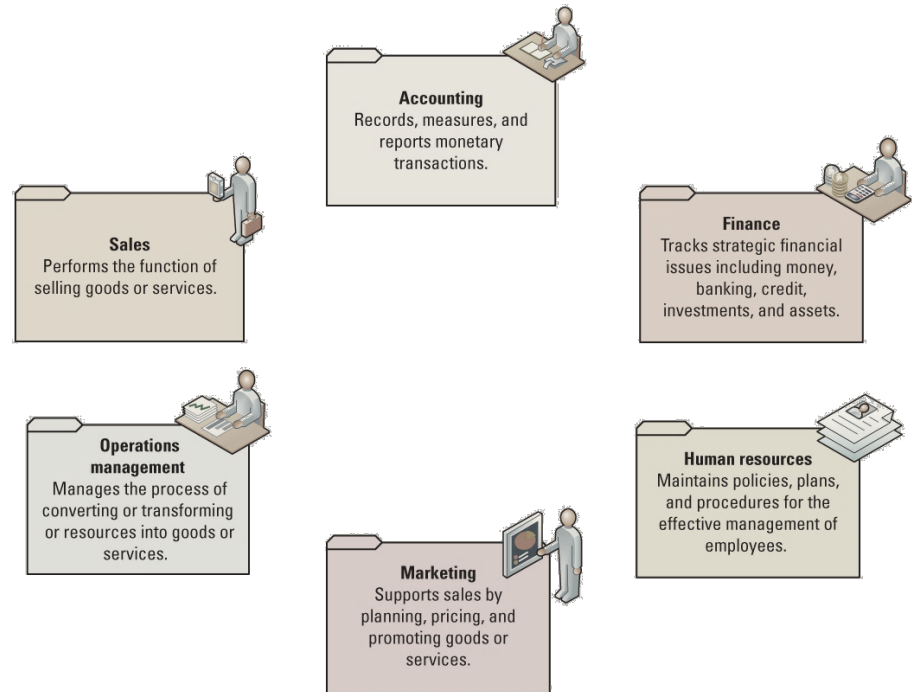
**INFORMATION:** The item I have is a product that has the most sales during the month of December.

**BUSINESS INTELLIGENCE:** The month of December this year is going to see interest rates raise by 10 percent, and snow storms are expected to cause numerous problems throughout the East Coast.

**KNOWLEDGE:** Given the unexpected financial issues caused by the storms and the interest rate hike, we will offer a discount on purchases in November and December to ensure sales levels increase by 10 percent.

# SYSTEMS THINKING AND MANAGEMENT INFORMATION SYSTEMS

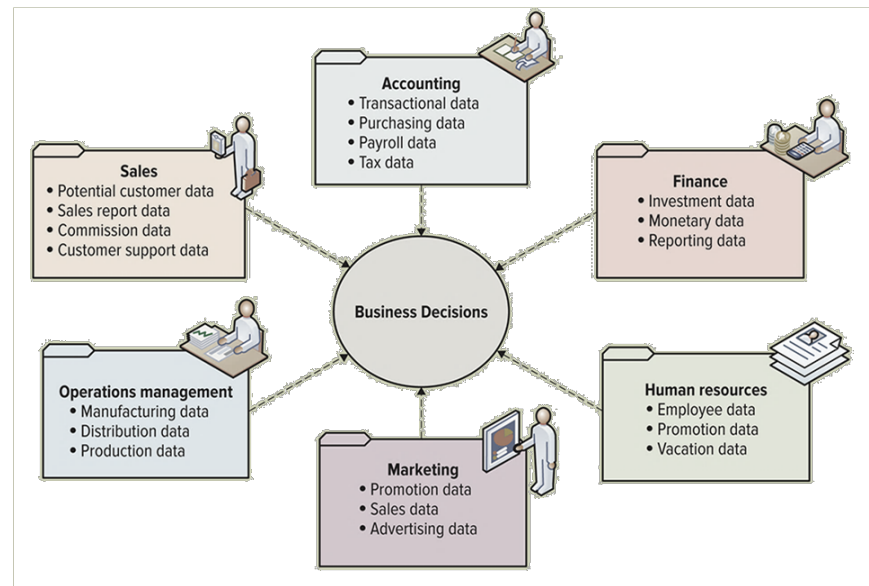
- Common departments working independently
- **Data silo**—When one unit is unable to freely communicate with other business units, making it difficult or impossible for organizations to work cross-functionally



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# THE MIS SOLUTION

- Common departments working interdependently
- **Data democratization**—The ability for data to be collected, analyzed, and accessible to all users



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# SYSTEMS THINKING 1

**Goods**—Material items or products that customers will buy to satisfy a want or need

- Cars
- Groceries
- Clothing

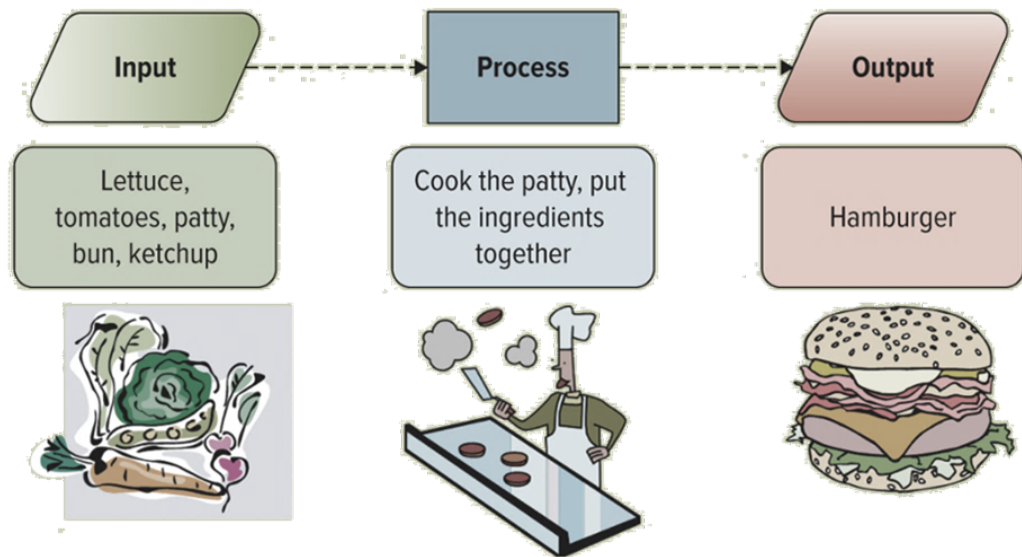
**Services**—Tasks performed by people that customers will buy to satisfy a want or need

- Teaching
- Waiting Tables
- Cutting Hair



# SYSTEMS THINKING 2

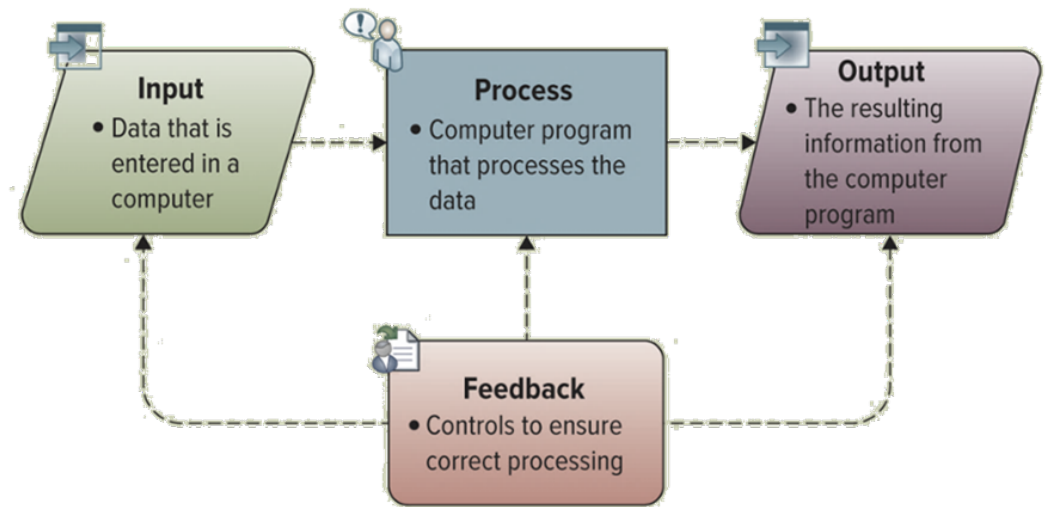
- **Production**—The process where a business takes raw materials and processes them or converts them into a finished product for its goods or services



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# SYSTEMS THINKING <sup>3</sup>

- **Systems thinking**—A way of monitoring the entire system by viewing multiple inputs being processed or transformed to produce outputs while continuously gathering feedback on each part



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# SYSTEMS THINKING 4

- **Management Information Systems (MIS)**— A business function, like accounting and human resources, which moves information about people, products, and processes across the company to facilitate decision making and problem solving



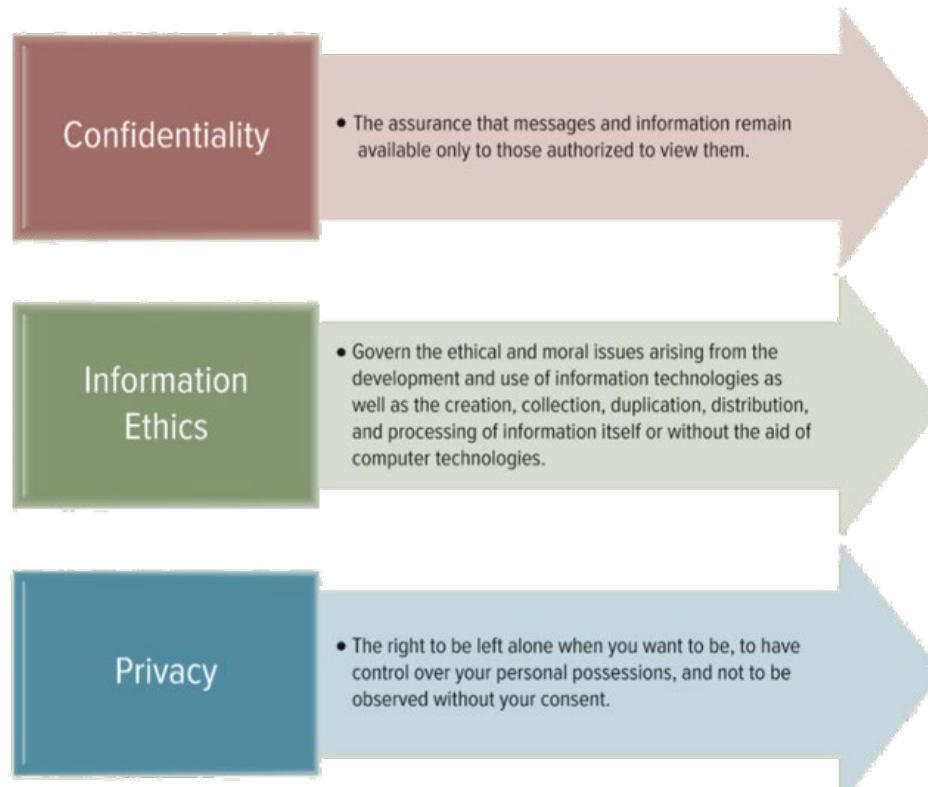
# INFORMATION ETHICS 1

- **Ethics**—The principles and standards that guide our behavior toward other people





# INFORMATION ETHICS 2



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# INFORMATION ETHICS <sub>3</sub>

## Business issues related to information ethics

- Copyright
- Counterfeit software
- Digital rights management
- Intellectual property
- Patent
- Pirated software



# LEGAL VS. ETHICAL <sup>1</sup>

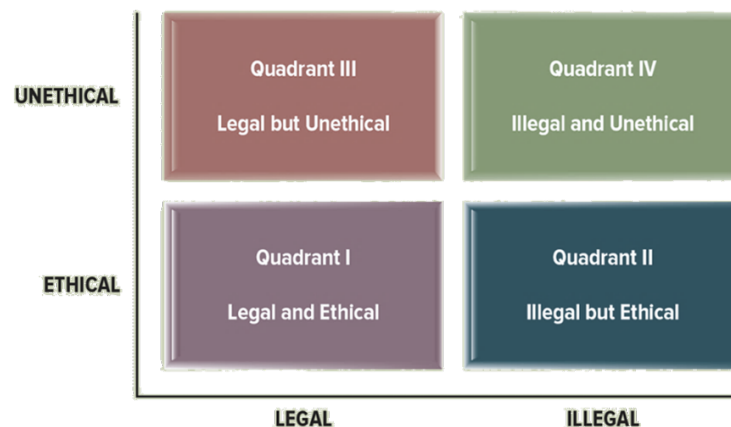
Individuals form the only ethical component of MIS

- Individuals copy, use, and distribute software
- Search organizational databases for sensitive and personal information
- Individuals create and spread viruses
- Individuals hack into computer systems to steal information
- Employees destroy and steal information



# LEGAL VS. ETHICAL 2

- Acting ethically and legally are not always the same
- Information does not care how it is used. It will not stop itself from sending spam, viruses, or highly sensitive information



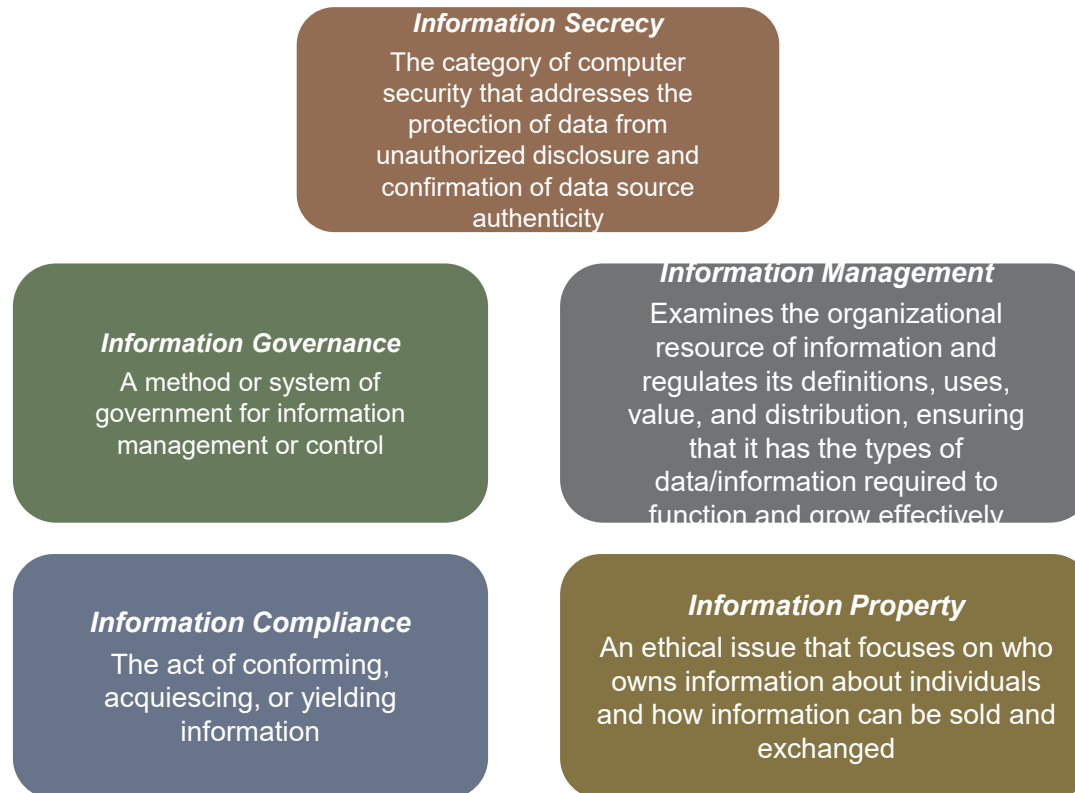
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# INFORMATION DOES NOT HAVE ETHICS; PEOPLE DO <sup>1</sup>

- **Data scraping**—The process of extracting large amounts of data from a website and saving it to a spreadsheet or computer
- **Digital trust**—The measure of consumer, partner, and employee confidence in an organization's ability to protect and secure data and the privacy of individuals



# INFORMATION DOES NOT HAVE ETHICS; PEOPLE DO <sup>2</sup>



# INFORMATION SECURITY

Organizational information is intellectual capital—it must be protected

- **Information security**—The protection of information from accidental or intentional misuse by persons inside or outside an organization
- **Downtime**—Refers to a period of time when a system is unavailable
- **Cybersecurity**—Involves prevention, detection, and response to cyberattacks that can have wide-ranging effects on individuals, organizations, communities, and nations
- **Cyberattacks**—Malicious attempts to access or damage a computer system



# PROTECTING INTELLECTUAL ASSETS <sub>1</sub>

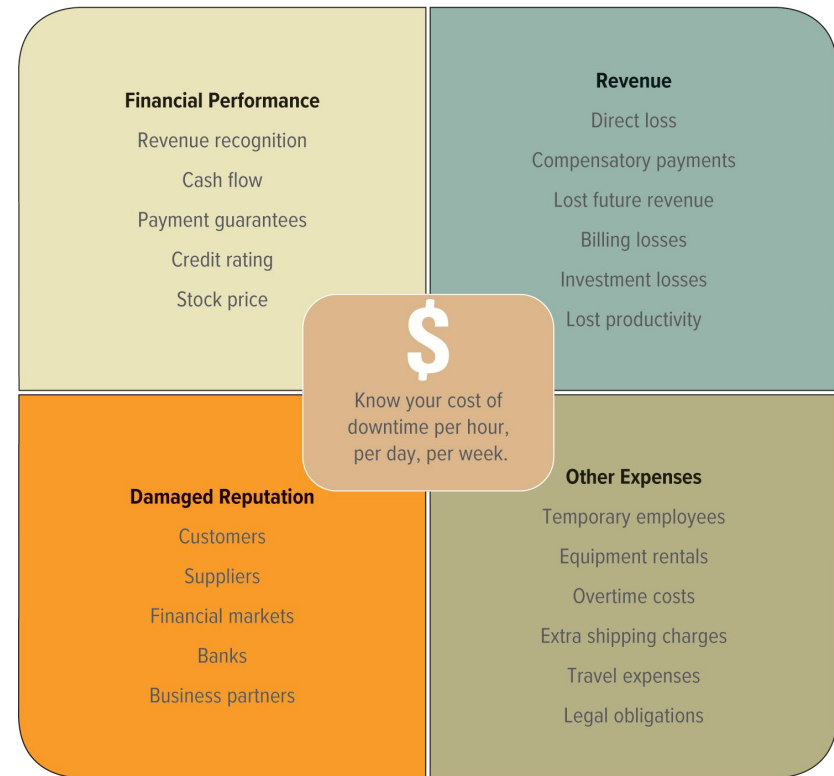
- Sources of  
Unplanned  
Downtime

Bomb threat	Hacker	Snowstorm
Burst pipe	Hail	Sprinkler malfunction
Chemical spill	Hurricane	Static electricity
Construction	Ice storm	Strike
Corrupted data	Insects	Terrorism
Earthquake	Lightning	Theft
Electrical short	Network failure	Tornado
Epidemic	Plane crash	Train derailment
Equipment failure	Frozen pipe	Smoke damage
Evacuation	Power outage	Vandalism
Explosion	Power surge	Vehicle crash
Fire	Rodents	Virus
Flood	Sabotage	Water damage (various)
Fraud	Shredded data	Wind



# PROTECTING INTELLECTUAL ASSETS 2

- How Much Will Downtime Cost Your Business?



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# HACKERS: A DANGEROUS THREAT TO BUSINESS <sup>1</sup>

**Hacker**—Experts in technology who use their knowledge to break into computers and computer networks, either for profit or just motivated by the challenge

- Black-hat hacker
- Cracker
- Cyberterrorist
- Hacktivist
- Script kiddies or script bunnies
- White-hat hacker



# HACKERS: A DANGEROUS THREAT TO BUSINESS <sub>2</sub>

**Virus**—Software written with malicious intent to cause annoyance or damage

- Adware
- Malware
- Ransomware
- Scareware
- Spyware
- Worm



# VIRUSES: A DANGEROUS THREAT TO BUSINESS <sup>1</sup>

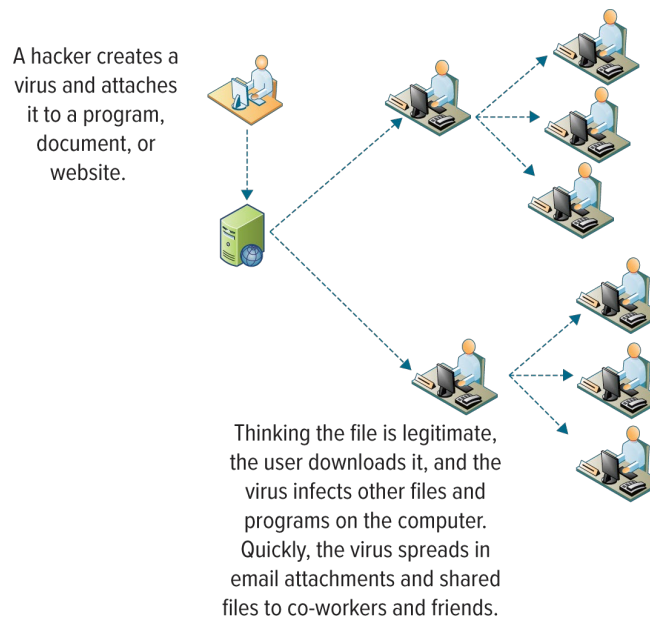


**Virus**—Software written with malicious intent to cause annoyance or damage

- Backdoor program
- Denial-of-service attack (DoS)
- Distributed denial-of-service attack (DDoS)
- Polymorphic virus
- Trojan-horse virus

# VIRUSES: A DANGEROUS THREAT TO BUSINESS <sub>2</sub>

## How Computer Viruses Spread



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# VIRUSES: A DANGEROUS THREAT TO BUSINESS <sup>3</sup>

Security threats to ebusiness include

- Elevation of privilege
- Hoaxes
- Malicious code
- Packet tampering
- Sniffer
- Spoofing
- Splogs
- Spyware



# TYPES OF BUSINESS

*Profit* - occurs when businesses sell products or services for more than they cost to produce.

*Loss* - occurs when businesses sell products or services for less than they cost to produce.

Businesses typically organize in one of the following types:

- Sole proprietorship.
- Partnership.
- Corporation.

# SOLE PROPRIETORSHIP

- ***Sole proprietorship*** - a business form in which a single person is the sole owner and is personally responsible for all the profits and losses of the business.
- Many small businesses are sole proprietorships.



# PARTNERSHIP

***Partnership*** - similar to sole proprietorships, except that this legal structure allows for more than one owner.

Each partner is personally responsible for all the profits and losses of the business.

When starting a partnership, it is wise to have a lawyer draft a partnership agreement.

- Partnership agreement.

# CORPORATION <sup>1</sup>

***Corporation (organization, enterprise, or business)*** - an artificially created legal entity that exists separate and apart from those individuals who created it and carry on its operations.

- Shareholder.

An important advantage of a corporation is that it offers the shareholders limited liability.

- Limited liability.

# CORPORATION <sup>2</sup>

Two general types of corporations :

1. *For profit corporation* - focuses on making money and all profits and losses are shared by the business owners.
2. *Not for profit (or nonprofit) corporation* - usually exist to accomplish some charitable, humanitarian, or educational purpose, and the profits and losses are not shared by the business owners.

# CORPORATION <sup>3</sup>

**Limited liability corporation (LLC)** - a hybrid entity that has the legal protections of a corporation and the ability to be taxed (one time) as a partnership.

Reasons businesses choose to incorporate.

- Limited liability.
- Unlimited life.
- Transferability of shares.
- Ability to raise investment capital.

# ACCOUNTING

*Accounting department* - provides quantitative information about the finances of the business including recording, measuring, and describing financial information.

There is a difference between bookkeeping and accounting.

- Financial accounting.
- Managerial accounting.

# FINANCIAL STATEMENTS <sup>1</sup>

- *Transaction* - an exchange or transfer of goods, services, or funds involving two or more people.
- *Source document* - describes basic transaction data such as its date, purpose, and amount and includes cash receipts, canceled checks, invoices, customer refunds, employee time sheet, etc.
- *Solvency* - represents the ability of the business to pay its bills and service its debt.

# FINANCIAL STATEMENTS <sup>2</sup>

- *Financial statement* - the written records of the financial status of the business that allow interested parties to evaluate the profitability and solvency of the business.
- Four primary financial statements include:
  1. Balance sheet.
  2. Income statement.
  3. Statement of owner's equity.
  4. Statement of cash flow.

# BALANCE SHEET <sup>1</sup>

**Balance sheet** - gives an accounting picture of property owned by a company and of claims against the property on a specific date.

Based on the fundamental accounting principle that  $\text{assets} = \text{liabilities} + \text{owner's equity}$ .

- **Asset** - anything owned that has value or earning power.
- **Liability** - an obligation to make financial payments.
- **Owner's equity** - the portion of a company belonging to the owners.



# BALANCE SHEET <sup>2</sup>

ASSETS		LIABILITIES	
<b>Current Assets</b>		<b>Current Liabilities</b>	
Cash	\$ 250,000	Accounts Payable	\$ 150,000
Securities	\$ 30,000	Loans (due < 1 year)	\$ 750,000
Accounts Receivable	\$ 1,500,000	Taxes	\$ 200,000
Inventory	\$ 2,920,000		
		<b>Long-term Liabilities</b>	
<b>Fixed Assets</b>	\$ 7,500,000	Loans (due > 1 year)	\$ 2,500,000
		<b>Total Liabilities</b>	\$ 3,600,000
		<b>Owner's Equity</b>	\$ 8,600,000
<b>Total Assets</b>	<b>\$12,200,000</b>	<b>Total Liabilities + Owner's Equity</b>	<b>\$12,200,000</b>

**ASSETS = LIABILITIES + OWNER'S EQUITY**

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# INCOME STATEMENT <sup>1</sup>

*Income statement (earnings report, operating statement, and profit-and-loss (P&L) statement)* - reports operating results (revenues minus expenses) for a given time period ending at a specified date.

The income statement reports a company's **net income**, or the amount of money remaining after paying taxes.

- Revenue.
- Expense.

# INCOME STATEMENT<sup>2</sup>

Income Statement	
Revenue (Sales)	\$60, 000,000
Cost of Goods Sold	\$30, 000,000
<b>Gross Profit</b> (Sales – Cost of Goods Sold)	\$30, 000,000
Operating Expenses	\$7, 000,000
<b>Profit Before Taxes</b> (Gross Profit – Operating Expenses)	\$23, 000,000
Taxes	\$ 18,000,000
<b>Net Profit (or Loss)</b>	\$5,000,000

# STATEMENT OF OWNER'S EQUITY

***Statement of owner's equity (statement of retained earnings or equity statement)*** - tracks and communicates changes in the shareholder's earnings.

Profitable organizations typically pay shareholders dividends.

- Dividend.

# STATEMENT OF CASH FLOWS

***Statement of cash flow*** - summarizes sources and uses of cash, indicates whether enough cash is available to carry on routine operations, and offers an analysis of all business transactions, reporting where the firm obtained its cash and how it chose to allocate the cash.

Companies typically project cash flow statements on a monthly basis for the current year and a quarterly basis for the next two to five years.

- Financial quarter.

# FINANCE <sup>1</sup>

***Finance*** - deals with the strategic financial issues associated with increasing the value of the business while observing applicable laws and social responsibilities.

Financial decisions include such things as:

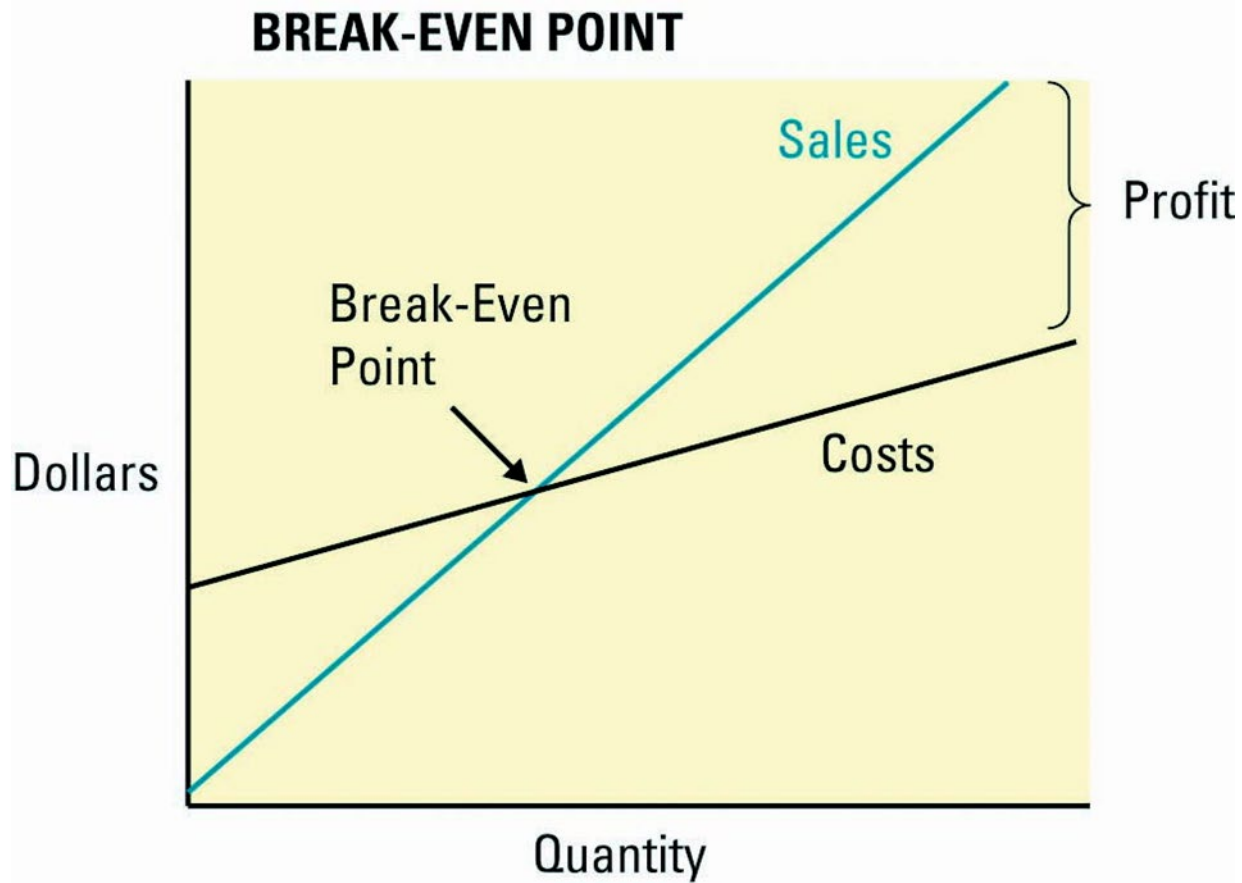
- How the company should raise and spend its capital.
- Where the company should invest its money.
- What portion of profits will be paid to shareholders in the form of dividends.
- Should the company merge with or acquire another business.

# FINANCE <sub>2</sub>

Different financial ratios evaluate a company's performance

- Internal rate of return (IRR).
- Return on investment (ROI).
- Cash flow analysis.
- Break-even analysis.
- Break-even point.

# FINANCE <sup>3</sup>



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# HUMAN RESOURCES

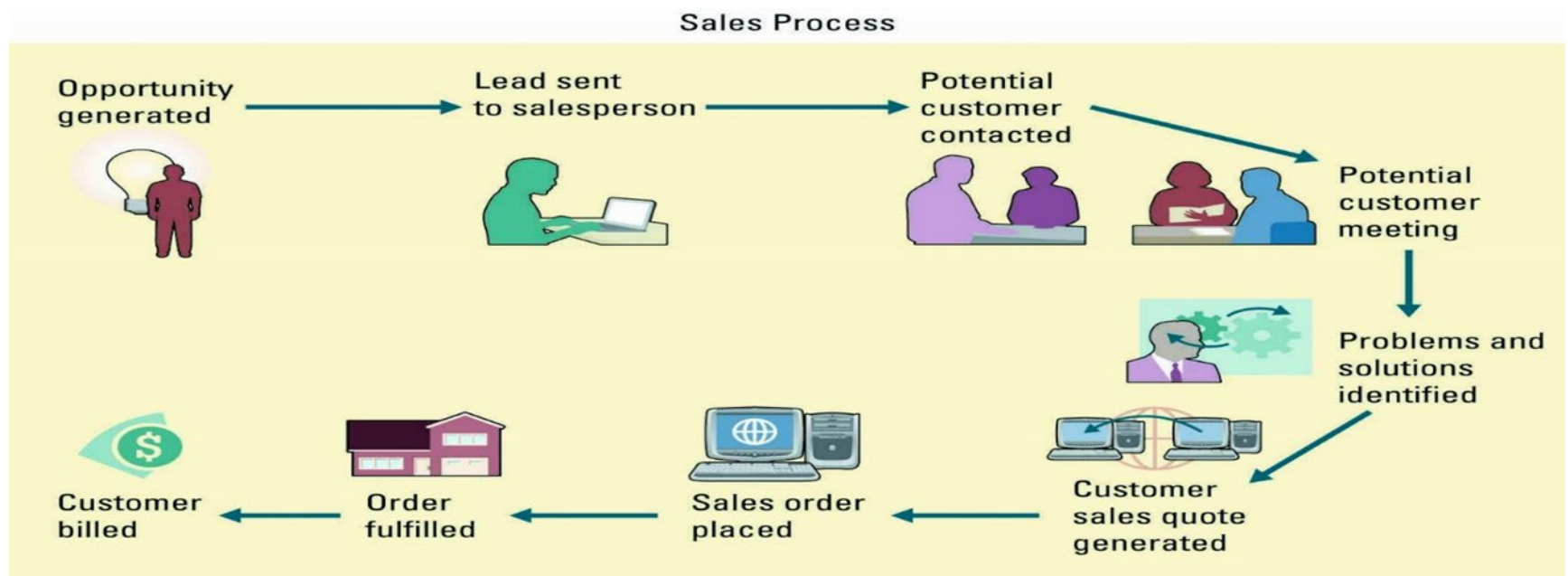
**Human resources management (*HR*)** - includes the policies, plans, and procedures for the effective management of employees ('human resources').

HR typically focuses on the following:

- Employee recruitment.
- Employee selection.
- Employee training and development.
- Employee appraisals, evaluations, and rewards.
- Employee communications.

# SALES

- *Sales* - the function of selling a good or service and focuses on increasing customer sales, which increases company revenues.



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# MARKET SHARE <sup>1</sup>

- Measuring the proportion of the market that a firm captures is one way to measure a firm's performance relative to its competitors.
- ***Market share*** - calculated by dividing the firm's sales by the total market sales for the entire industry.
- For example, if a firm's total sales (revenues) were \$2 million and the sales for the entire industry were \$10 million, the firm would have captured 20 percent of the total market, or have a 20 percent market share.

# MARKET SHARE <sup>2</sup>

## Reasons to Increase Market Share.

- Economies of scale.
- Sales growth in a stagnant industry.
- Reputation.
- Increased bargaining power.

# MARKETING <sub>1</sub>

## Ways to Increase Market Share.

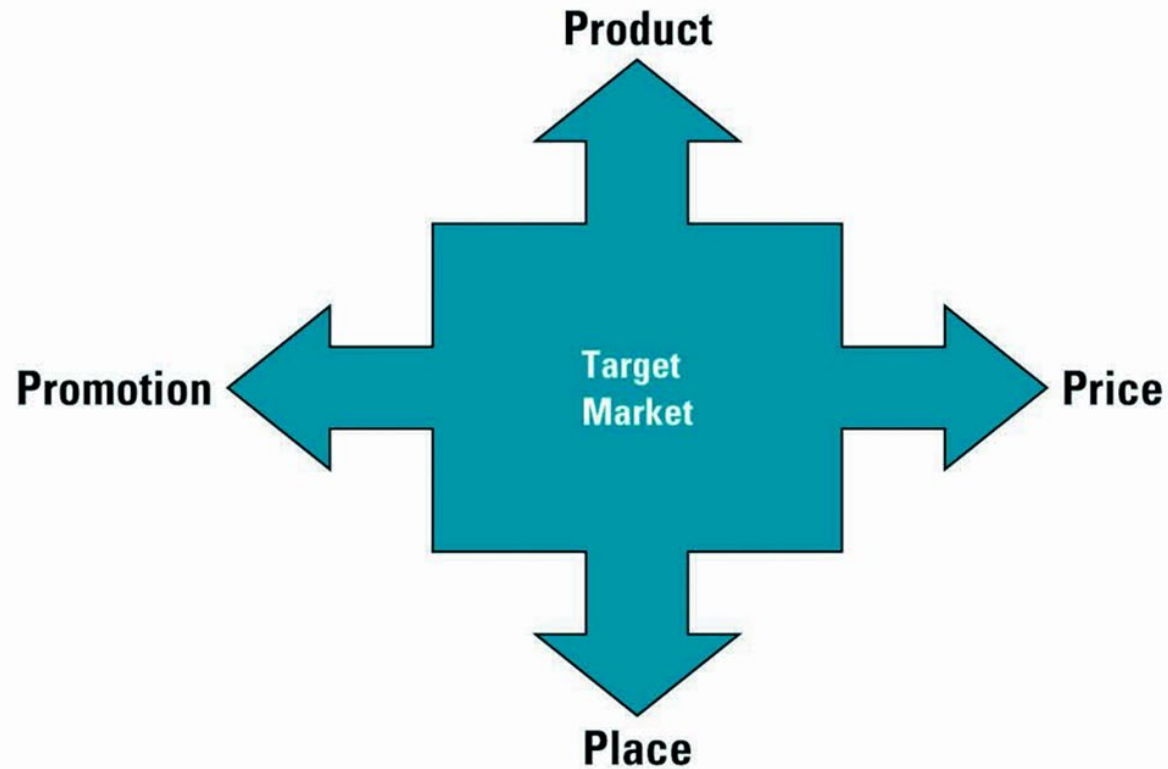
- Product.
- Price.
- Place.
- Promotion.

There are also reasons not to increase market share.

# MARKETING <sup>2</sup>

- ***Marketing*** - the process associated with promoting the sale of goods or services.
- ***Marketing communication*** - seeks to build product or service awareness and to educate potential consumers on the product or service.
- ***Marketing mix*** - includes the variables that marketing managers can control in order to best satisfy customers in the target market.

# MARKETING MIX <sup>1</sup>



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# MARKETING MIX <sup>2</sup>

Product	Price	Place (Distribution)	Promotion
Quality	Discount	Channel	Advertising
Brand	Financing	Market	Sales
Appearance	Lease	Location	Public relations
Package		Logistics	Marketing message
Function		Service Level	Media type
Warranty			Budget
Service/Support			



# MARKETING SEGMENTATION

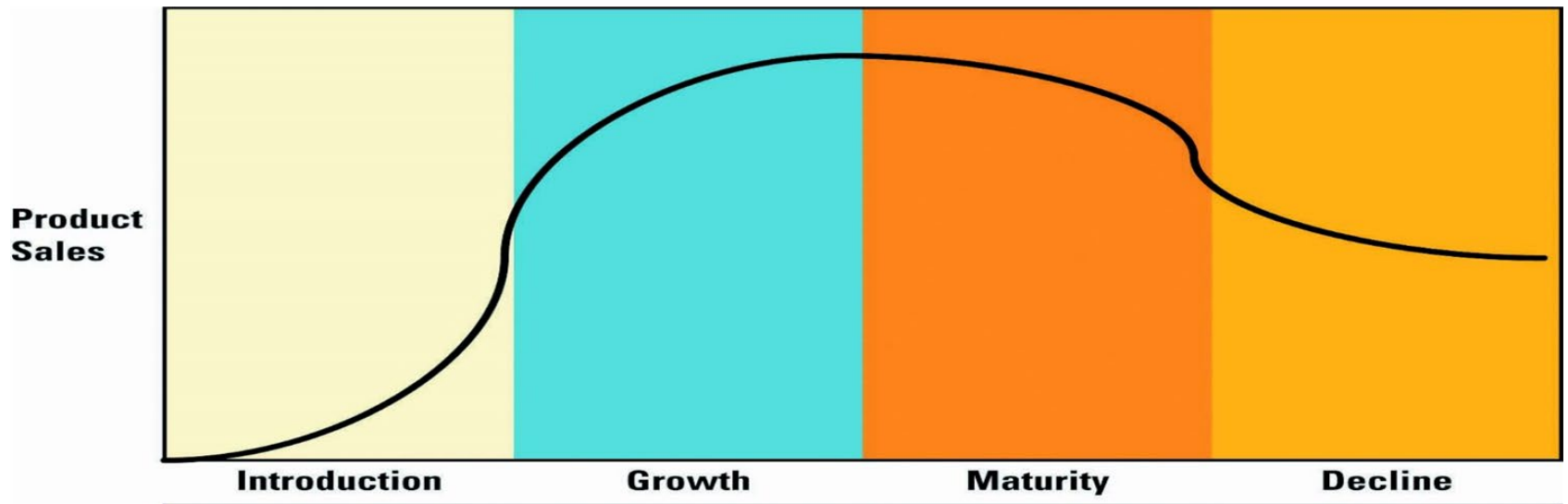
***Market segmentation*** - the division of a market into similar groups of customers.

Market segmentation typically includes:

- Geographic segmentation.
- Demographic segmentation.
- Psychographic segmentation.
- Behavioral segmentation.

# PRODUCT LIFE CYCLE

- ***Product life cycle*** - includes the four phases a product progresses through during its life cycle.



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# OPERATIONS / PRODUCTION

*Operations management (production management)*  
- includes the methods, tasks, and techniques organizations use to produce goods and services.

- The operations department oversees the transformation of input resources into output resources.
- The operations department is critical because it manages the physical processes by which companies take in raw materials, convert them into products, and distribute them to customers.

# BUSINESS PROCESS REENGINEERING

- ***Business process*** - a standardized set of activities that accomplish a specific task, such as processing a customer's order.
- ***Business process reengineering (BPR)*** - the analysis and redesign of workflow within and between enterprises.