澳門理工大學
Universidade Politécnica de Macau
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COMP423: Strategic Planning for MIS

Management Information Systems

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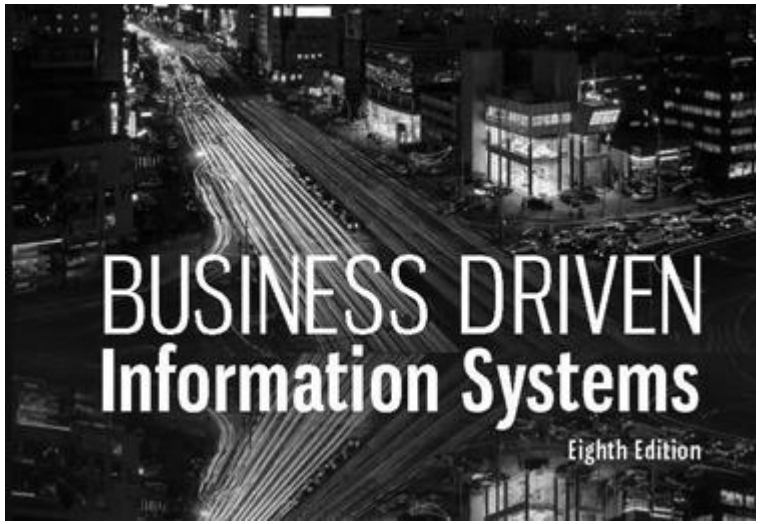
Macau, SAR

- **SECTION 1.1 – BUSINESS DRIVEN MIS**
  - Competing in the Information Age
  - The Challenge of Departmental Companies and the MIS Solution

- **SECTION 1.2 – BUSINESS STRATEGY**
  - Identifying Competitive Advantages
  - The Five Forces Model – Evaluating Industry Attractiveness
  - The Three Generic Strategies – Choosing a Business Focus
  - Value Chain Analysis – Executing Business Strategies

CHAPTER ONE OVERVIEW



Business Driven MIS

1. Describe the information age and the differences between data, information, business intelligence, and knowledge

2. Explain systems thinking and how management information systems enable business communications

LEARNING OUTCOMES

COMPETING IN THE INFORMATION AGE

Did you know . . .

- Avatar, the movie, took over 4 yrs to make and cost $450 million
- Lady Gaga's real name is Joanne Angelina Germanotta
- It costs $3.7 million for a 30-second advertising time slot during the Super Bowl in US

COMPETING IN THE INFORMATION AGE

- **Fact** - The confirmation or validation of an event or an object

- **Information age** – A time when infinite quantities of facts are widely available to anyone who can use an Internet-enabled computer

COMPETING IN THE INFORMATION AGE

- Examples of combining 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

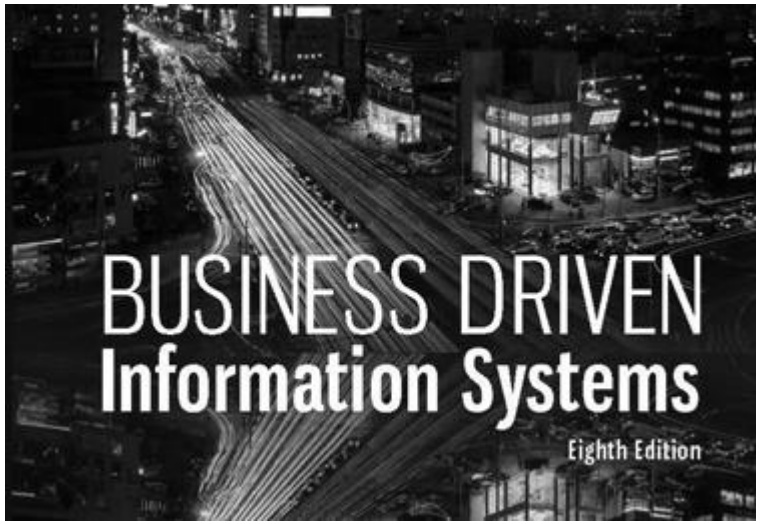
COMPETING IN THE INFORMATION AGE

- **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

- The core drivers of the information age
  - Data
  - Information
  - Business intelligence
  - Knowledge



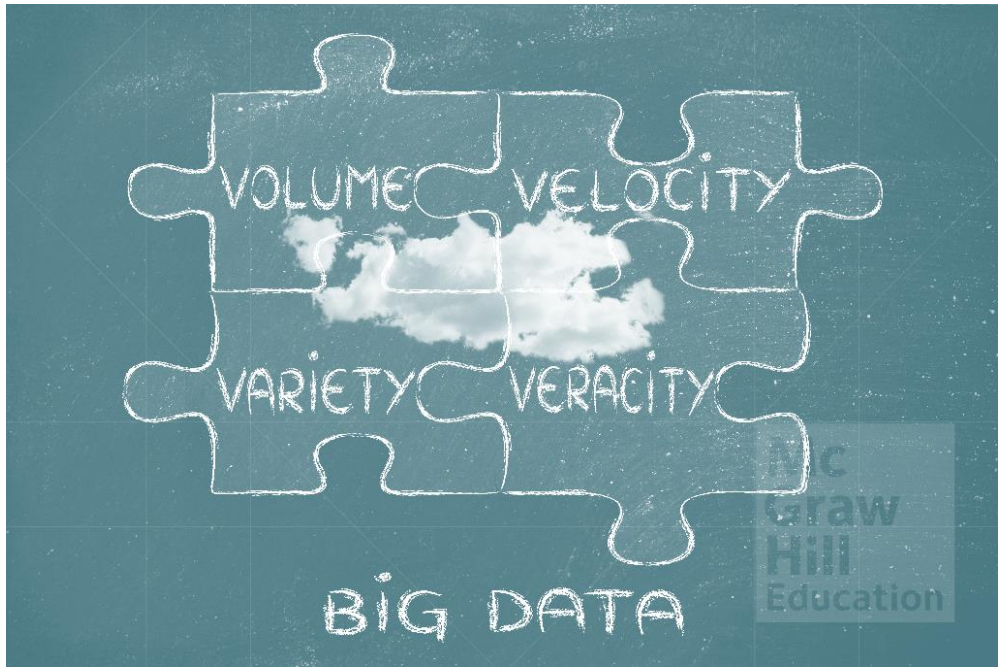
Information & Data

DATA

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

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

  - **Variety -** Different forms of structured and unstructured data
  - **Volume -** The scale of data
  - **Velocity -** The analysis of streaming data as it travels around the Internet
  - **Veracity** - The quality, accuracy, integrity and credibility of data



DATA

- **Structured data** – Has a defined length, type, and format and includes numbers, dates, or strings such as Customer Address format
  - **Machine-generated data** – Created by a machine without human intervention
  - **Human-generated data** – Data that humans, in interaction with computers, generate

DATA

- **Unstructured data** – Not defined, does not follow a specified format, and is typically free-form text such as emails, tweets, text messages, and images/audios/ videos, etc. do not follow a specified format
  - **Machine-generated unstructured data** – Such as satellite images, scientific atmosphere data, and radar data
  - **Human-generated unstructured data** – Such as text messages, social media data, and emails

DATA

STRUCTURED DATA	UNSTRUCTURED DATA
Sensor data	Satellite images
Weblog data	Photographic data
Financial data	Video data
Click-stream data	Social media data
Point of sale data	Text message
Accounting data	Voice mail data

DATA

- 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

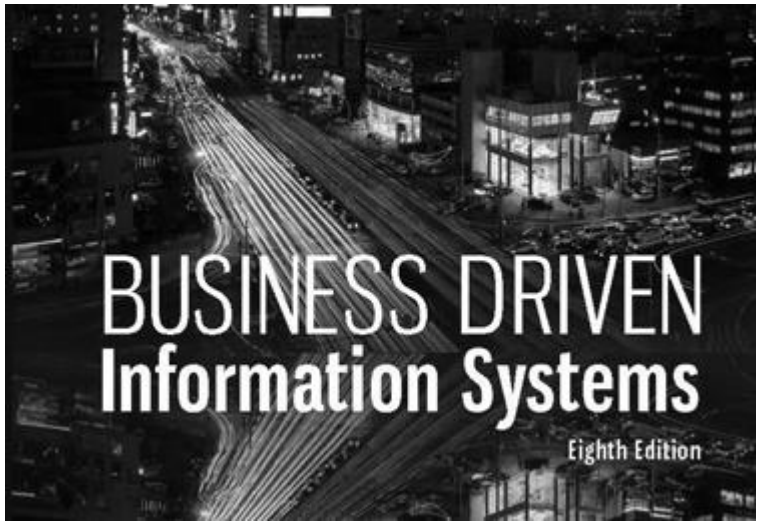
INFORMATION

- **Information** - Data converted into a meaningful and useful context
- **Variable -** A data characteristic that stands for a value that changes or varies over time

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

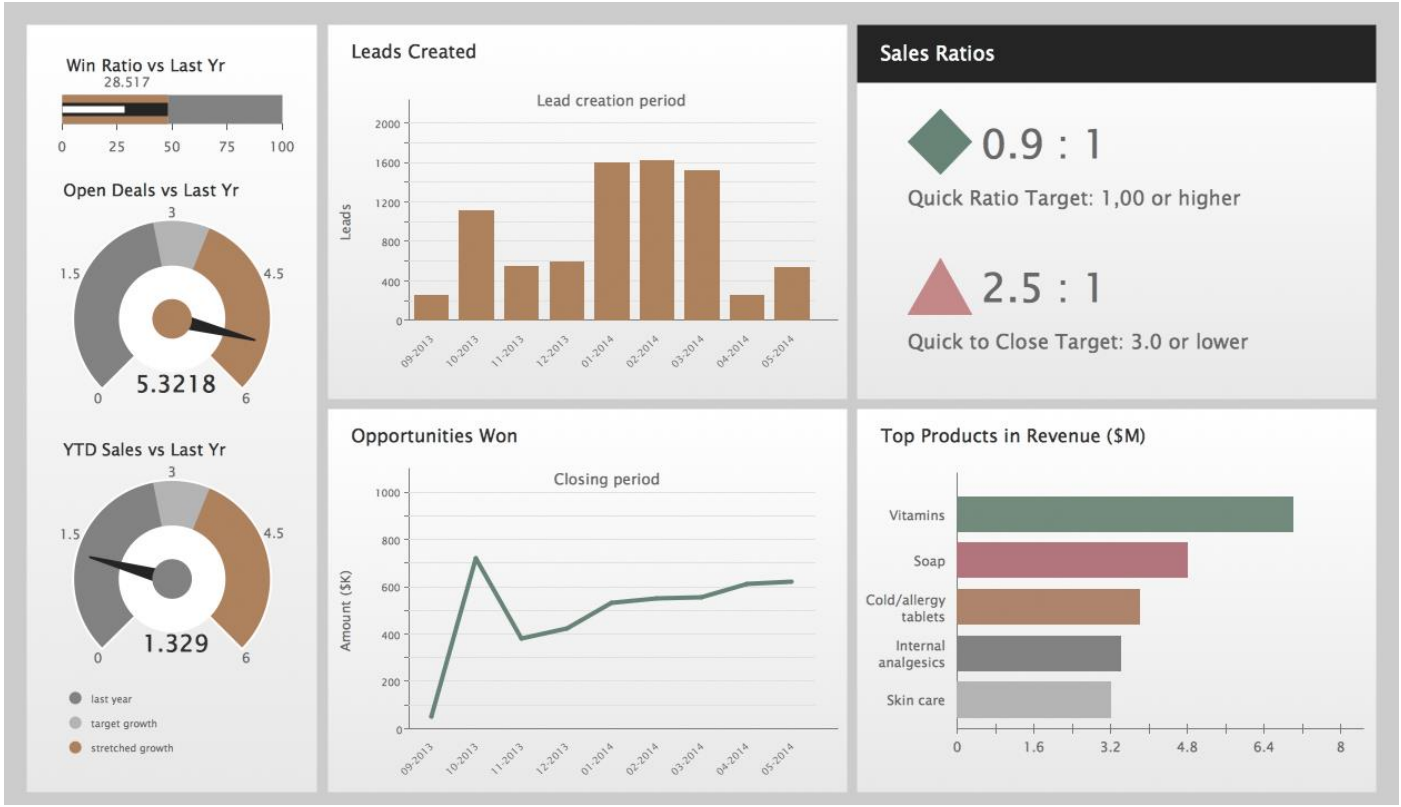
- **Report** - A document containing data organized in a table, matrix, or graphical format allowing users to easily comprehend and understand information
  - **Dynamic report** - Changes automatically during different timing and scenarios
  - **Static report** - Created once based on data that does not change



Business Intelligence

BUSINESS INTELLIGENCE

- **Business intelligence** - Information collected from multiple data sources such as supplier, customer, competitor, partner, and industry that analyzes patterns, trends, and relationships for strategic decision making

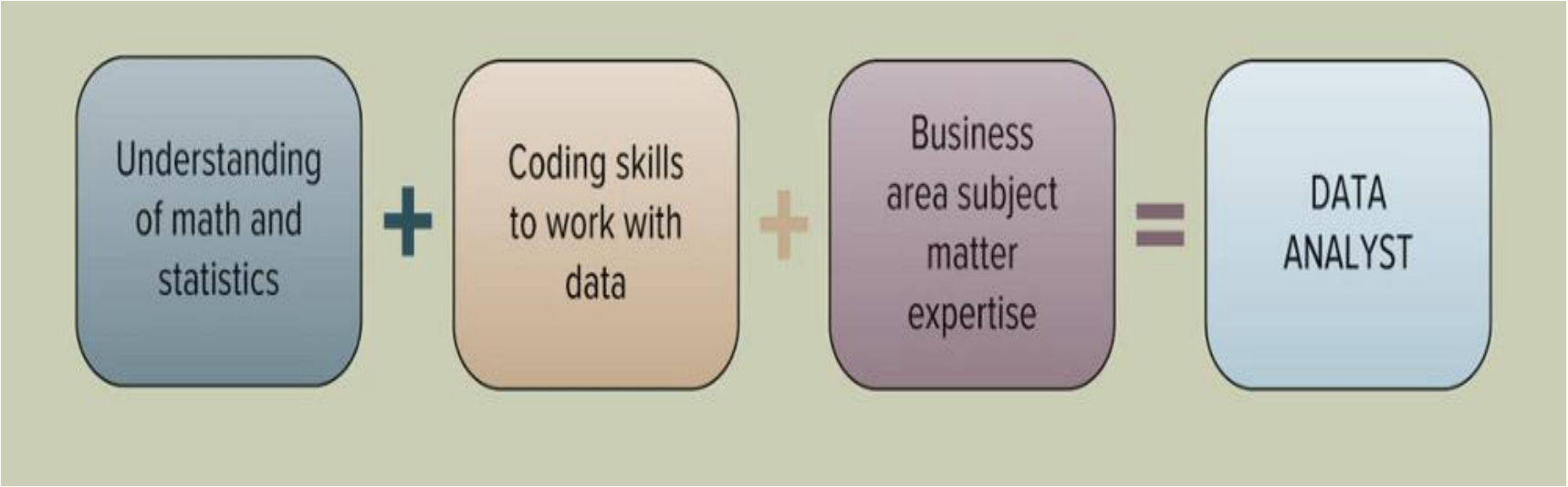


BUSINESS INTELLIGENCE

- **Data analyst** – Collects and queries organizational data to uncover patterns/trends and to provide insights for strategic business decision making
- **Analytics** – The science of fact-based decision making
- **Business analytics** – The scientific process of transforming data into insights for making better decisions
- **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

- Three Key Skills for a Data Analyst

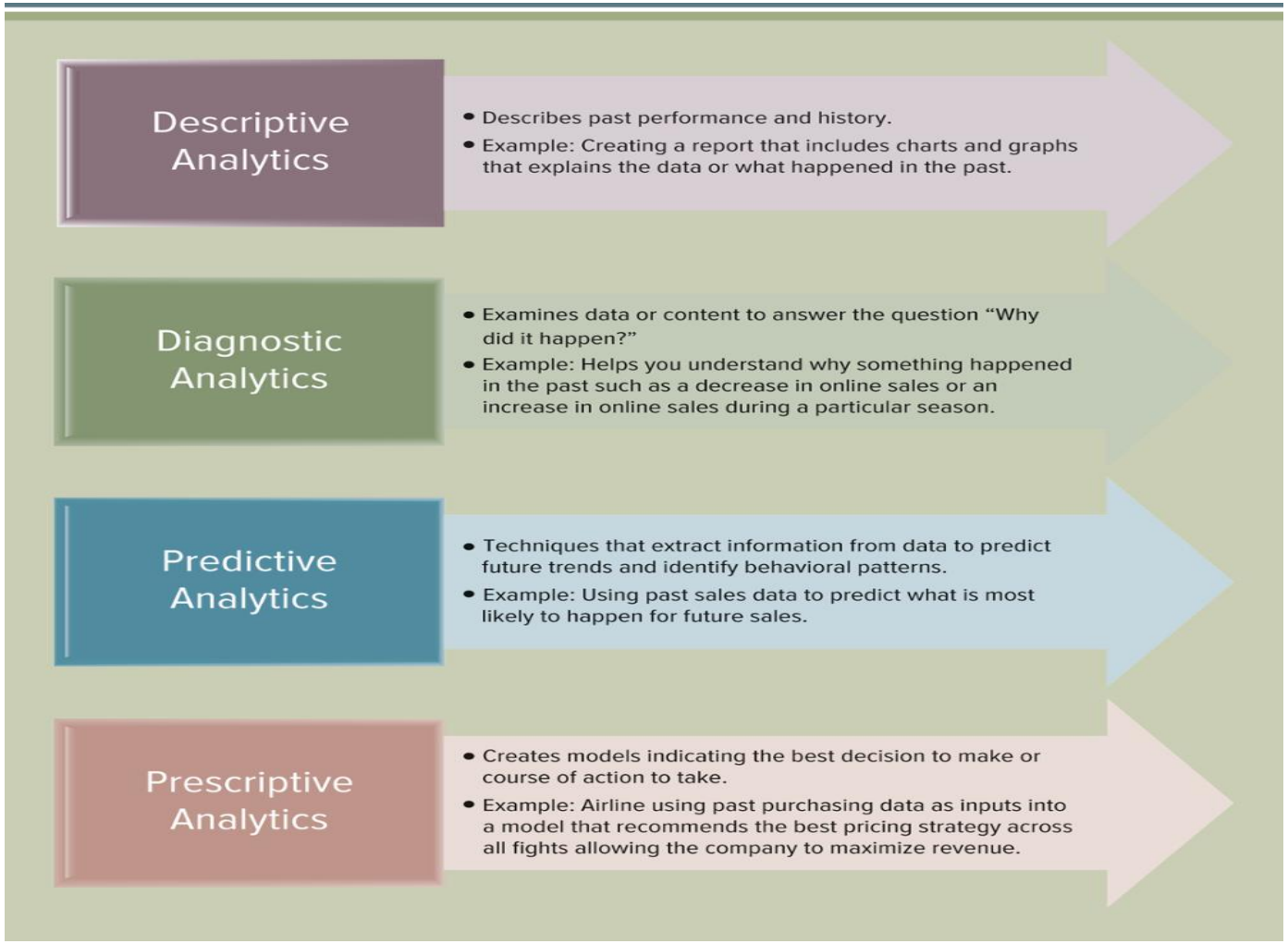


BUSINESS INTELLIGENCE

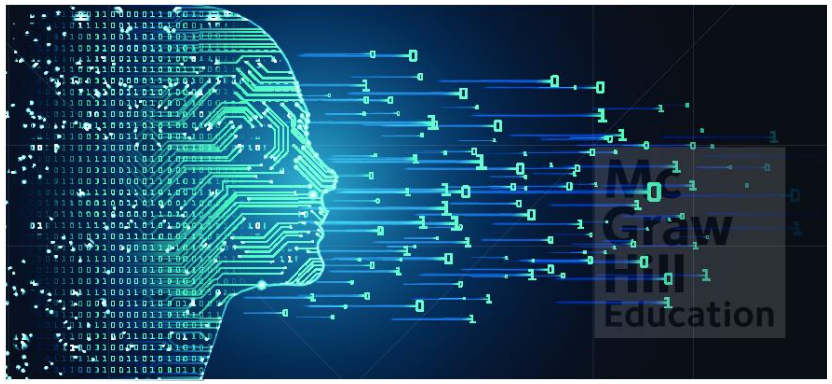
- **Descriptive analytics** – Describes part performance and history
- **Diagnostic analytics** – Examines data or content to answer the questions, “Why did it happen?”
- **Predictive analytics** – Extracts information from data and uses it to predict future trends and identify behavioral patterns
- **Prescriptive analytics** – Creates models to generate best decisions to make or to elaborate courses of action to take

BUSINESS INTELLIGENCE

- Four Categories of Analytics



KNOWLEDGE



- **Knowledge** - Skills, experience, and expertise coupled with information and intelligence that creates a person's intellectual resources
- **Knowledge assets** - The human, structural, and recorded resources available to the organization
- **Knowledge facilitators -** Help harness the wealth of knowledge in the organization
- **Knowledge worker** – Individual valued for their ability to interpret and analyze information

KNOWLEDGE

- The Transformation from Data to Knowledge

DATA: I have one item.

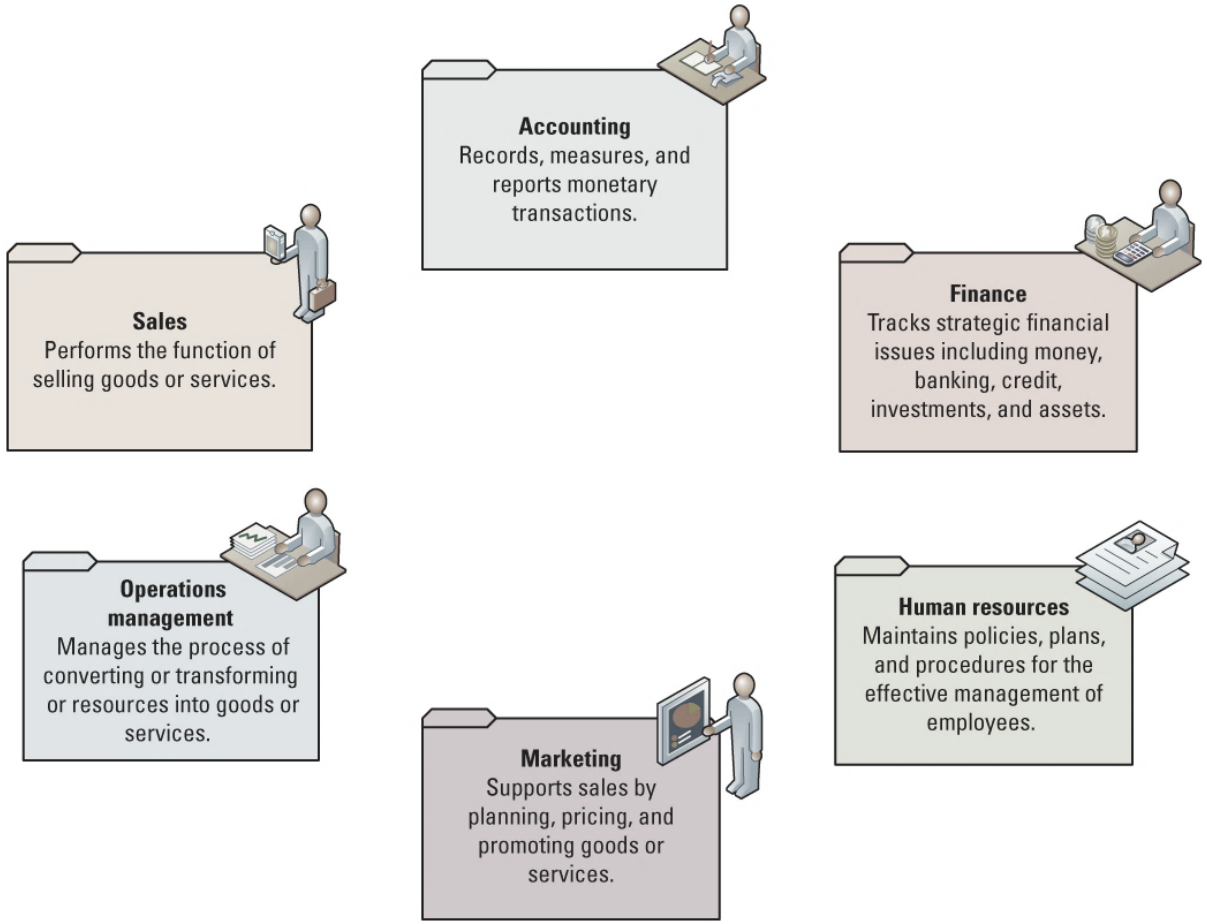
INFORMATION: The item I have is a product that has the most sales during the month of December.

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

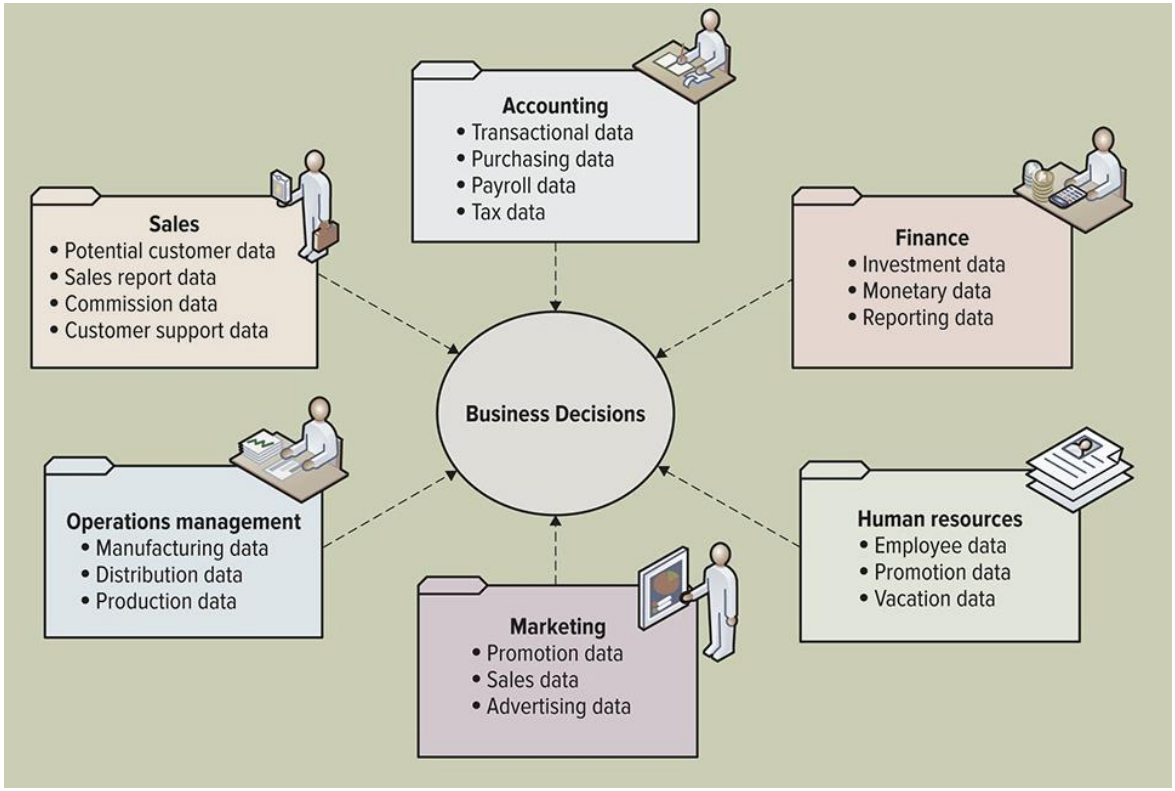
KNOWLEDGE: Given the unexpected financial issues caused by the storms and the interest rate hike, we will offer a discount on purchases in November and December to ensure sales levels increase by 10 percent.

SYSTEMS THINKING AND MANAGEMENT INFORMATION SYSTEMS

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



THE MIS SOLUTION

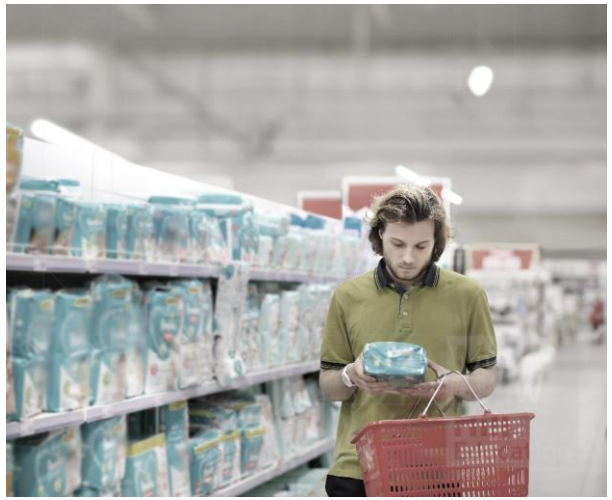


- Common departments working interdependently
- **Data democratization -** The ability for data to be collected, analyzed, and accessible to all users in different parts of an organization

SYSTEMS THINKING

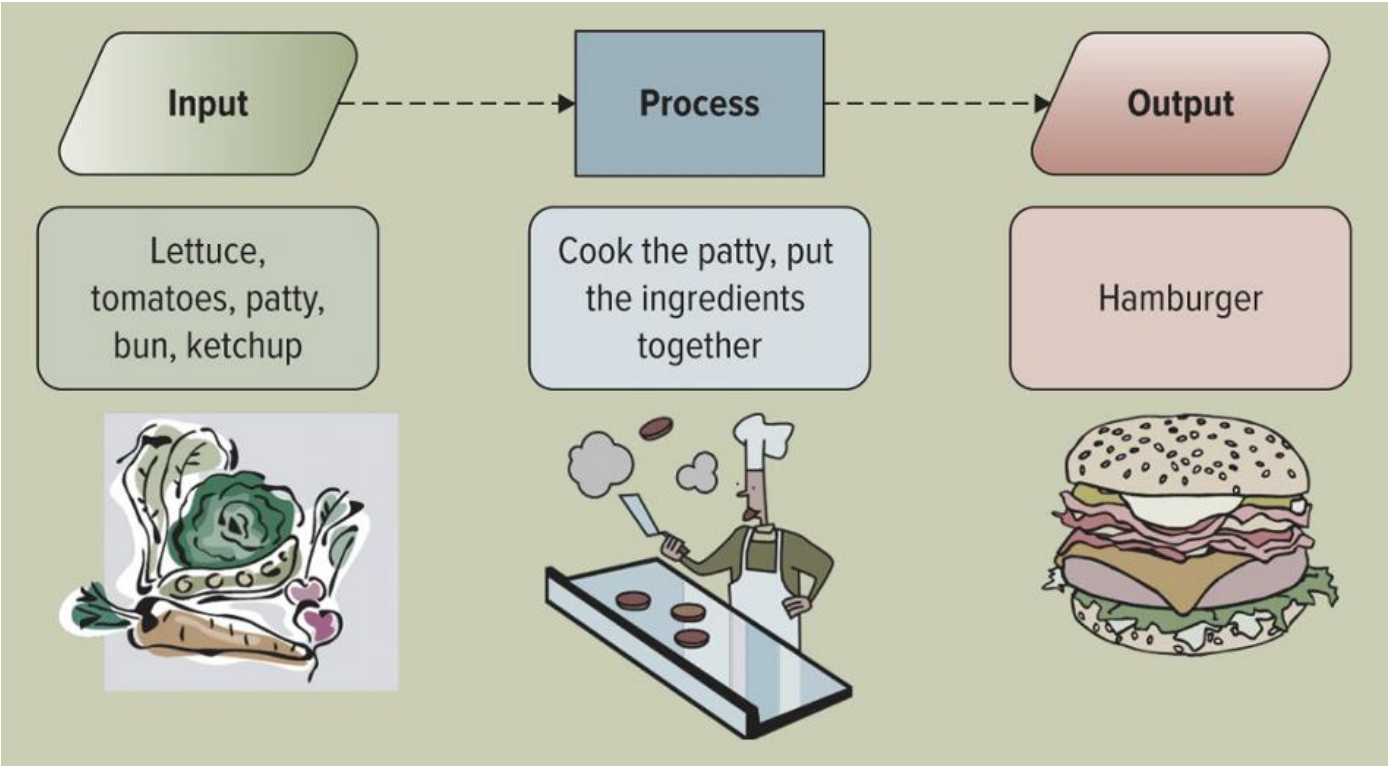
- ***Goods -*** Material items or products that customers will buy so as to satisfy a want or need
  - Cars
  - Groceries
  - Clothing

- ***Services -*** Tasks performed by people that customers will buy to satisfy a want or need
  - Teaching
  - Waiting Tables
  - Cutting Hair



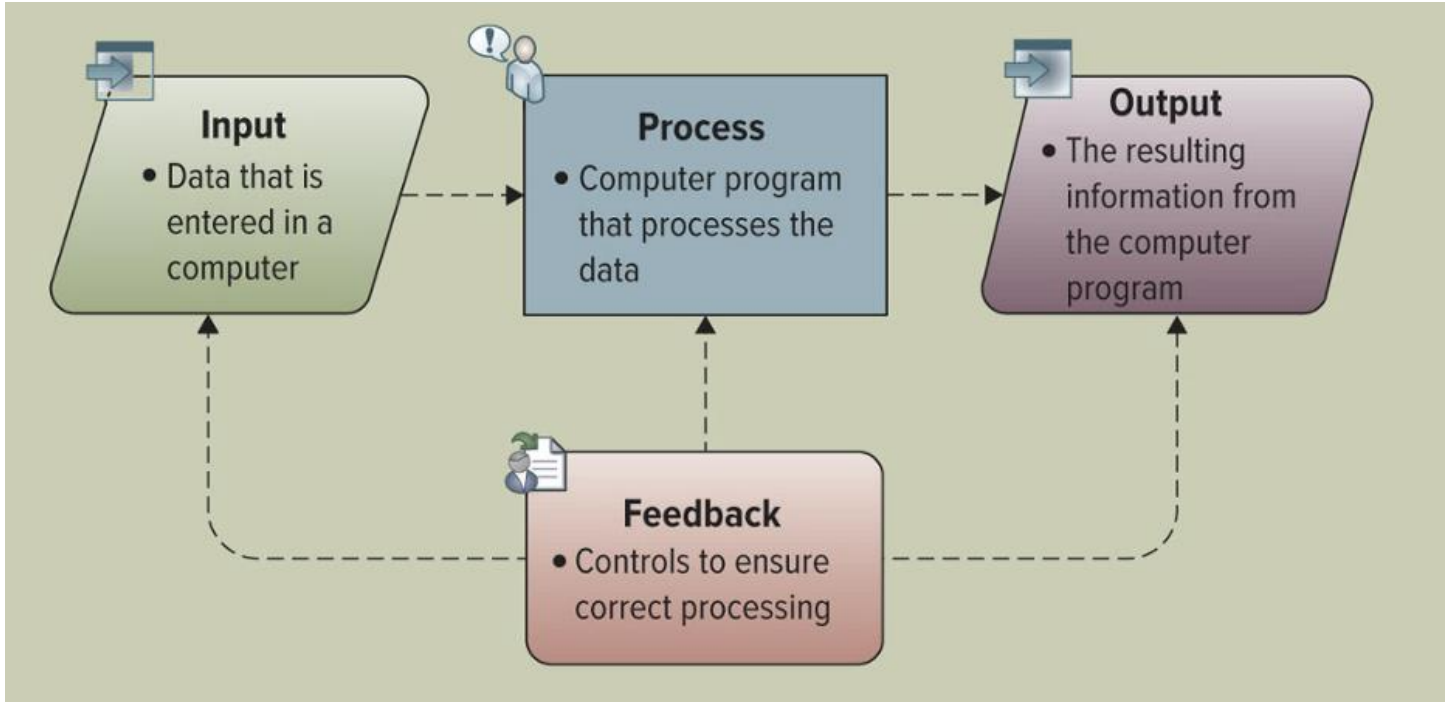
SYSTEMS THINKING

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



SYSTEMS THINKING

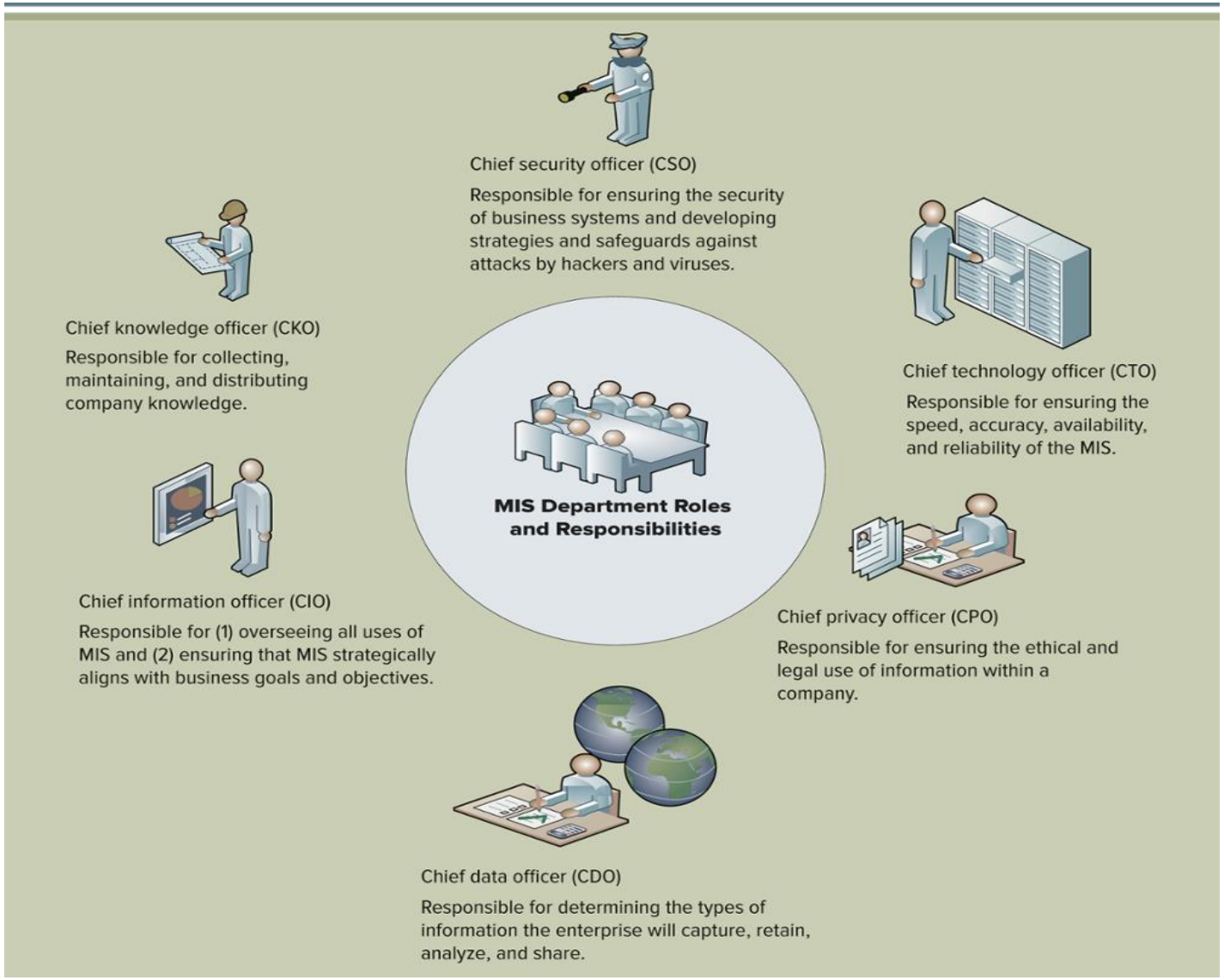
- **Systems thinking –** A way of monitoring the entire system by viewing multiple inputs being processed or transformed to produce outputs while continuously gathering feedback in each step



SYSTEMS THINKING

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

MIS DEPARTMENT: ROLES AND RESPONSIBILITIES



MIS DEPARTMENT: ROLES AND RESPONSIBILITIES

- **Chief information officer (CIO)** – Responsible for ensuring the strategic alignment of MIS function with business goals and objectives
- **Chief data officer (CDO)** – Responsible for determining the types of information the enterprise will capture, retain, analyze, and share
- **Chief technology officer (CTO)** – Responsible for ensuring the throughput, speed, accuracy, availability, and reliability of information
  - Chief security officer (CSO)
  - Chief privacy officer (CPO)
  - Chief knowledge officer (CKO)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