Chapter 1: Introduction to Information Systems
What We Will Cover:

- Business Organizations and the Business Environment?
- What are Data, Information, and Knowledge?
- What is an Information System?
Student ROI (Return on Investment)

Your investment of time and effort in this course will result in your being able to answer these questions:

1. How do different factors in a business environment, such as the Internet and globalization, impact the need for timely data, information, and knowledge?

2. What role does the data-information-knowledge continuum play in your success as a current student and future knowledge worker?

3. How do the different types of information systems (IS) help knowledge workers manage data, information, and knowledge?
Welcome!

- We want to prepare you for your future as a knowledge worker.
- Business and information first, then IT!
- What we do with IT to create business value is usually more important than the IT itself!
Knowledge Work and Knowledge Workers

- Knowledge work is the intellectual activity that is performed by people upon data, information and knowledge in order to discover business options.

- A **knowledge worker** is a professional who performs knowledge work.

- Examples of verbs associated with the activities of knowledge workers include *describe, compile, consolidate, validate, illustrate, analyze, clarify, modify, evaluate, interpret, simulate* and *communicate.*
What are Business Organizations?

- For our purposes, a **business** is an organization with one or more people who:
  1. decide upon one or more goals to pursue
  2. work together to locate and organize resources
  3. create processes in order to achieve the desired goal or goals.

- One of the most important factors influencing a business is the **business environment**.
The Business Environment

- Customers
- Suppliers
- Competitors
- Governments

Physical Environment
Technology
Why learn about a business organization?

You will spend much of your life in and around a business organization:

- Approximately, 86,000 hours (40 hrs/wk x 50 wks/yr x 43 years) at work in an organization
- over 16 times as many hours as you spent working to earn your degree
Changing Business Organizations

- Increasingly, organizations are turning to technology and information systems to keep pace with dynamic business environments.

- Organizations rely on this digital information to gain competitive advantage and to respond quickly to opportunities and other changes in the business environment.

- As organizations strive to respond quickly, they are changing the way they organize or structure themselves. Much of this change involves globalization and the Internet.
Globalization and the Internet

- **Globalization** means that modern businesses are using information technology to:
  - expand their market to customers around the globe
  - to find the lowest-cost suppliers regardless of location
  - to create 24-hour business days by shuttling work across time zones and nations.

- Much of globalization is built around the **Internet**, which is simply a large number of cooperating computer networks that use the same rules for sending messages.

- The most widely used component of the Internet is the **World Wide Web** that allows us to transfer text, images, audio, and video as well as new ways of buying and selling goods, that is, carrying out **commerce** in the global marketplace.

- Commerce using computer networks is known as **E-commerce**, which is the use of information systems, technologies, and computer networks by individuals and organizations to create business value.
Given the importance of data, information, and knowledge, we look deeper into the meaning of each word.

- **Data** are raw unorganized facts, numbers, pictures, and so on.
- **Information** is data that has been organized and is useful to a person.
- **Knowledge** is created when a person combines experience and judgment with information.

What about wisdom? *Wisdom* adds insight and ethics to the data-information-knowledge continuum.
Becoming a Knowledge Worker

According to Peter Drucker: \textit{knowledge workers} are people who:

- are at the heart of the new economy
- require a good deal of formal education
- require the ability to acquire and to apply theoretical and analytical knowledge
- require a habit of continuous learning

[Drucker, 1994, pages 53-80].
Becoming a Knowledge Worker

- Your ability to create knowledge is one of the key reasons a business will hire you. A business expects its employees to recognize opportunities, solve problems, and create business value.
- Knowledge work involves the discovery, transformation, analysis, synthesis, and communication of data, information, and knowledge.
- To be a successful knowledge worker, you need to build on the two types of knowledge that you possess: explicit knowledge and tacit knowledge.
Two Types of Knowledge

**Explicit knowledge** - knowledge that is readily codified such as the knowledge in this textbook.

**Tacit knowledge** - knowledge that is within you that you gained through experience and through insight and discovery.
What is an Information System (IS)?

- An **information system (IS)** is *an organized collection of people, information, business processes, and information technology*, designed to transform inputs into outputs, in order to achieve a goal.

- Information systems enhance knowledge work, decision making, problem solving, communicating, and coordinating.
Why Learn about Information Systems?

- *Information* is at the heart of business decisions and processes.
- *Information systems* and *technology* are the tools business people use to access, create, find, store, and transform information.
- Without IS, the modern business organization would not be able to compete effectively.
IPO Model of an Information System

- **INPUT**
  - Data
  - Information
  - Knowledge
  - Decision(s)

- **PROCESS**
  - People
  - Business Processes
  - Information Technology

- **OUTPUT**
  - Data
  - Information
  - Knowledge
  - Decision(s)
  - Business Value
# Information System Components

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Input</td>
<td>Items entered into a system in order to transform them into outputs.</td>
</tr>
<tr>
<td>Process</td>
<td>A series of one or more steps used by a business to transform inputs into outputs.</td>
</tr>
<tr>
<td>Output</td>
<td>The end result of a process. Information is the result of the transformation (processing) of data. From an organizational perspective, the output of a process is a product or a service.</td>
</tr>
<tr>
<td>Data</td>
<td>Raw, unorganized facts</td>
</tr>
<tr>
<td>Information</td>
<td>Processed/organized/transformed data that is useful to a person</td>
</tr>
<tr>
<td>Knowledge</td>
<td>Information plus human experience and judgment.</td>
</tr>
<tr>
<td>System</td>
<td>A recognizable whole that consists of a collection of interrelated parts that interact with each other to transform inputs into outputs in order to achieve a goal.</td>
</tr>
</tbody>
</table>
## Information System Components (Cont.)

<table>
<thead>
<tr>
<th>Concept</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>People</strong></td>
<td>People or organizations that have both an interest in and an influence on the creation, implementation, or operation of an IS.</td>
</tr>
<tr>
<td><strong>Information Technology</strong></td>
<td>The physical components, typically hardware, software, and connectivity, that make up an IS. Technology enables processes to perform the steps they were designed to accomplish.</td>
</tr>
<tr>
<td><strong>Decision</strong></td>
<td>A choice made from one or more alternatives to follow or avoid some course of action.</td>
</tr>
<tr>
<td><strong>Business Value</strong></td>
<td>A positive return on the investment of resources that is created through the effective and efficient integration of an organization’s people, information, information technology, and business processes</td>
</tr>
</tbody>
</table>
There are a number of types of IS that are widely used in creating business value:

- Transaction Processing Systems (TPS)
- Management Information Systems (MIS)
- Decision Support Systems (DSS)
- Enterprise Resource Management (ERP) Systems
- Customer Relationship Management (CRM) Systems
IS-Type: TPS

- **Transaction Processing System (TPS)**
- **What do they do?** - Capture and process transactions to make them available to the organization.
- **How does this create business value?** – Enables a business to efficiently and accurately track the transactions that are at the heart of all business activities. Captured transaction data can then be used to support decision making.
Management Information System (MIS)

What do they do? - Provide timely information to decision-makers through processing and reporting features.

How does this create business value? – Timely reporting can enable managers to monitor critical processes and to avoid costly mistakes.
IS-Type: DSS

- Decision Support System (DSS)
- **What do they do?** - Provide analytical and visualization tools to support and enhance decision making.
- **How does this create business value?** - Enables decision-makers to make decisions based on data and to discover new business opportunities through the use of tools provided by the IS.
IS-Type: ERP

- Enterprise Resource Planning (ERP)

What do they do? - Integrate and standardize processes and centralize and standardize the storage and management of data.

How does this create business value? - Can reduce costs associated with duplication of processes and effort. Also, can reduce decision-making mistakes made due to multiple versions of the same data, information, and knowledge.
IS-Type: CRM

- **Customer Relationship Management (CRM)**

- **What do they do?** - Integrates data collection, transformation, storage, and analysis of customer transaction data, including purchases, service requests, and other forms of customer contact.

- **How does this create business value?** - Greatly increases understanding of customers’ purchasing and service behaviors and needs. Facilitates timely and proactive management of customers.
IS Security

- As businesses increasingly rely on the use of IS to support and enable the creation of business value, the need for IS security also grows.

- **IS security** (also known as *information assurance*) protects people, information, software, hardware, networks, and organizations from the harmful actions of others.

- Harmful actions include unauthorized use of computing or system resources, and unauthorized access to and use of private and/or proprietary data, information, and knowledge.
About the Book

Spiral model

- This book uses a *spiral approach* to learning that starts with familiar topics (individual computing) and moves to unfamiliar topics (organizational and inter-organizational use of information systems)
  
  Individual → organization → inter-organizational

- Each level discusses business and technology and the integration of the two concepts to create business value.
The Spiral Model of this Book
Group Assignment:

Find any succeed company. Describe on how this company use IS in their business activities. Write 1 page on your description and present (within 5 minutes) your assignment next class.