HARVARD
Office of the Vice Provost for Advances in Learning

MODULE 3 UNIT 1
Interactive Infographic Transcript

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How data processing works

Data processing refers to a series of steps used to extract meaningful information from data. It happens wherever data is collected and operated on by people and machines.

Stages of data processing

1. Collection

Data is gathered from a variety of different sources (customer surveys, mobile apps, social media, newsfeeds, etc).

2. Preparation

Raw data is screened for any errors and cleaned prior to processing. This is very important, as using incorrect or incomplete data can produce misleading results.

3. Input

Clean data is converted into a form of language that can be read by machines. This is done by entering data into a computer via input devices.

3.1 Processing (traditional)

Data is manipulated to produce an output for interpretation. To break this down further, inputted data flows through a central processing unit (CPU) and memory to output devices.

Role of the CPU

The role of the CPU in traditional data processing

The CPU functions as an electronic brain, sending signals from the computer's memory to other parts of the machine that execute a series of instructions, transforming data into a set of predetermined outputs. Computer software programs accept the input from users and allow hardware devices (CPU, ROM, and RAM) to accept and operate on inputted data.

3.2 Processing (accelerated)

In the digital age, a range of coprocessors and cloud-based software applications augment CPU and RAM for large-scale computing and data processing.

4. Output

Data has been translated into a readable form and can be transmitted to and interpreted by users.

5. Storage

Data is stored for future use.

Data processing in the financial sector

Data processing is used to improve processes and solve a variety of problems in the financial sector.

Financial applications

- **Automated processes:** reduce errors and improve efficiency and customer satisfaction. AI-based chatbots sell insurance and capture and resolve insurance claims.
- **AI-based chatbots:** sell insurance and capture and resolve insurance claims.
- **Detecting fraudulent activities**: machines monitor financial transactions and pick up abnormal patterns that may indicate fraud.