Student Self-administered case study

Business hardware_Scanners in the supply chain

Case duration (Min): 45-60

Management Information Systems (MIS)

Business hardware and software

Worldwide

Case summary:

This case considers the use of input devices into business information systems - in particular the bar code scanner is reviewed. A collection of videos are used to determine what a barcode is and how such technologies are used by organizations to make operators more productive.

Learning objectives:

Identify different types of input and output devices used in business.
Discuss the importance of input and output devices to business.

Case problem:

How does data get into business computers and information systems? Computers and IT are central to the business information system and it is therefore important to have an understanding of the components that make up such systems if companies are to use them successfully. Companies need to understand the capabilities, purpose and benefits of different technologies. There is a need to select computing hardware (in this case input devices) to enable people and their work activities, to make the organization more efficient.

First, if you are taking a taught management course then consult with your tutor and ensure that the case has not been scheduled into a teaching class or tutorial. If it has not:
1. Play/ read the media associated with the case. You may need to access the Internet and enter a URL to locate any video clips.
2. Attempt the Case study questions.
Consider attempting the case study as a group exercise; you could form a study group with fellow students.
3. Check the suggested answers - remember these are suggestions only and there are often many possible answers.
Discuss questions and answers with other students.
4. If you feel your answer(s) were weak then consider reading the relevant suggested readings again (also see the case study suggested references).

Title/ Media type	URL/ Media description
What is a barcode?	http://www.yourtechtv.com/viewVideo.php?video_id=286&title=What_is_a_barcode_
Film	What is a barcode? - by Grant Wicks, VP of Marketing - Wasp Barcode Technologies.
MS337 Healthcare Scanner.	http://www.yourtechtv.com/viewVideo.php?video_id=741&title=MS337_Healthcare_Scanner
Film	
Driving Productivity Through Innovation :	http://www.yourtechtv.com/viewVideo.php?video_id=278&title=Driving_Productivity_Through_Innovation
Film	Video case study discussing chemical company Kemira's use of Intermec technologies in its supply chain operations, including use of 2D datamatrix barcodes and area imagers.

NOTES:

Case study questions...

	Action	Pre/During/After class
1	**KEY CONCEPTS :** What is a business information system? What is Information Technology?	During
2	**HARDWARE :** What is hardware; in your answer you should list examples of hardware components.	During
3	**INPUT AND OUTPUT DEVICES :** Input and output devices are part of a computer user interface, enabling interaction with a computer system. Briefly discuss their purpose; you should also discuss data entry and input and identify/list several examples of input devices (general and specific).	During
4	**SCANNERS :** What is a barcode and how might barcodes differ? Where are barcodes commonly found and what are they used for? What are the alternatives to barcodes? What is a barcode scanner and how do they vary?	During
5	**BENEFITS :** Evaluate the business benefits associated with barcode technology, other forms of scanners and related input technologies.	During

Answers...

DATA

Facts or observations about physical phenomena or business transactions. More specifically, data are objective measurements of the attributes (characteristics) of entities, such as people, places, things, and events.

DATA ENTRY FORM.

In an electronic database, a data entry form provides a convenient means of viewing, entering, editing and deleting records.

INPUT

The capture or collection of raw data from within the organization or from its external environment for processing in an information system.

INPUT DEVICE

A tool, such as a keyboard or voice recognition system, used to enter data into an information system.

MOUSE

An input device that controls an on-screen pointer to facilitate the point-and-click approach to executing different operations.

TRACKBALL

A device similar to a mouse, used for clicking, locking and dragging displayed information; in this case, the ball moves within the device rather than over a surface.

TRACK PAD

A device used for clicking, locking and dragging displayed information; the cursor is controlled by moving one's finger along a touch-sensitive pad.

TOUCH SCREEN

A computer monitor that serves both as input and output device. The user touches the areas of a certain menu item to select options, and the screen senses the selection at the point of the touch.

Question/ Answer

1 **KEY CONCEPTS :**

What is a business information system? What is Information Technology?

An information system is a system designed to produce information that can be used to support the activities of managers and other workers; or 'Interrelated components working together to collect, process, store, and disseminate information to support decision making, coordination and control in an organization'. Similarly it is (1) a set of people, procedures, and resources that collects, transforms, and disseminates information in an organization. (2) A system that accepts data resources as input and processes them into information products as output, (O'Brien 2002). Sandoe, Corbitt and Boykin (2001) consider the information system to be a unique configuration of IT resources,, with organizational processes, whereby the IT resources (and the information they provide) are applied to support specific organizational processes.
Information technology - the hardware and software that are used to store, retrieve, and manipulate information.
Whilst many scholars may use the terms IT and IS interchangeably, most consider IT to be a subset of IS.

2 **HARDWARE :**

What is hardware; in your answer you should list examples of hardware components.

Hardware - Describes the physical components of a computer system. The hardware of a computer system can be said to consist of: input devices, memory, central processing unit, output devices and storage devices.

3 **INPUT AND OUTPUT DEVICES :**

Input and output devices are part of a computer user interface, enabling interaction with a computer system. Briefly discuss their purpose; you should also discuss data entry and input and identify/list several examples of input devices (general and specific).

They are used to provide data and instructions to the computer and receive results from it.
Input concerns getting data into the computer. The data written in documents such as a sales order is human readable but means little to a computer. Machine readable data can be understood and read by computer devices. Data entry - Converting human readable data into a machine readable form (every keystroke on a keyboard, turns a human language character into a digital code that the machine can understand). Data input - Transferring machine readable data into the system.
Input devices include the keyboard, mouse, microphone and speech recognition technology, digital cameras, terminals, scanning devices, optical data readers, magnetic ink character recognition devices, magnetic stripe card, point-of-sale devices, automated teller machines, pen input devices, touch-sensitive screens, barcode scanners and radiofrequency identification technologies.

4 **SCANNERS :**

What is a barcode and how might barcodes differ? Where are barcodes commonly found and what are they used for? What are the alternatives to barcodes? What is a barcode scanner and how do they vary?

Bar code - a unique product code that enables a part or product type to be identified when read by a bar code scanner; it is a graphical representation of a number. Bar codes are like a printed version of the Morse code. Different bar and space patterns are used to represent different characters. Sets of these patterns are grouped together to form a "symbology". There are many types of bar code symbologies each having their own special characteristics and features. Most symbologies were designed to meet the needs of a specific application or industry. For example the UPC symbology was designed for identifying retail and grocery items and PostNET was designed to encode Zip Codes for the US Postal Service. A Barcode Symbology defines the technical details of a particular type of barcode: the width of the bars, character set, method of encoding, checksum specifications, etc. Numeric-only barcodes exist, such as UPC-A: Universal product code seen on almost all retail products in the USA and Canada; Alpha-numeric barcodes such as Code 128: or 2-Dimensional barcodes such as PDF417 are excellent for encoding large amounts of data.
Bar code reader - A bar code reader measures the intensity of a light beam reflected from a printed bar code to identify the digits making up a unique identification number. The digits making up the identification number are also printed at the foot of the bar code. If a label containing a bar code becomes damaged or cannot be read for some other reason, it may still be possible to enter the identification number manually.
Source data input device - A device that enables data entry directly from a document without need for human keying. Such devices include bar-code readers and optical character readers.
The alternatives to a barcode may include handwritten or typed information which take time to enter and read.

SOURCE DATA INPUT DEVICE

A device that enables data entry directly from a document without need for human keying. Such devices include bar-code readers and optical character readers.

BAR CODE

a unique product code that enables a part or product type to be identified when read by a bar code scanner.

BAR CODE READER.

A bar code reader measures the intensity of a light beam reflected from a printed bar code to identify the digits making up a unique identification number. The digits making up the identification number are also printed at the foot of the bar code. If a label containing a bar code becomes damaged or cannot be read for some other reason, it may still be possible to enter the identification number manually.

DIGITAL SCANNERS

Input devices that translate images such as pictures or documents into digital form for processing.

OPTICAL SCANNER.

The optical scanner can be used to capture graphics and text from printed documents. A photograph, for example, can be captured and converted into a form suitable for use with a number of different applications. Images captured in this way are normally incorporated into word processing or desktop publishing documents.

HARDWARE

Describes the physical components of a computer system. The hardware of a computer system can be said to consist of: input devices, memory, central processing unit, output devices and storage devices.

5 **BENEFITS :**

Evaluate the business benefits associated with barcode technology, other forms of scanners and related input technologies.

The business benefits associated with barcode technology, other forms of scanners and related input technologies include savings to input time, resulting in greater productivity, greater input accuracy and therefore more reliable data, resulting in less error and greater customer satisfaction.

INFORMATION TECHNOLOGY (IT)

any device, or collection of devices, that collects, manipulates, stores or distributes information, nearly always used to mean computer-based devices.

END-USER INTERFACE

The part of an information system through which the end user interacts with the system, such as on-line screens and commands.

USER INTERFACE

That part of an operating system or other program that allows users to communicate with it to load programs, access files, and accomplish other computing tasks.

DATA ENTRY

Converting human readable data into a machine readable form

DATA INPUT

Transferring machine readable data into the system

INFORMATION SYSTEM

(1) A set of people, procedures, and resources that collects, transforms, and disseminates information in an organization. (2) A system that accepts data resources as input and processes them into information products as output.

COMPUTER-BASED INFORMATION SYSTEM

An information system that uses computer hardware and software to perform its information processing activities.

Case study references

Cole, G A. and Kelly, P P. (2011) 'Management Theory and Practice', Ed. 7. Cengage EMEA.

Oz, E. and Jones, A. (2008) 'Management Information Systems', Ed. 1. Cengage Learning EMEA.

Stair, R M., Reynolds, G. and Chesney, T. (2008) 'Principles of Business Information Systems', Ed. 1. Cengage Learning EMEA.