MODERN APPLICATIONS OF INFORMATION SYSTEMS AND TECHNOLOGY

Information Systems in the Modern World

In the past, when a company received an order, either for a service or a product, it went to a paper-based workflow passed to different departments. Throughout this process, the order is re-typed, increasing the potential for human error.

And to retrieve the order status, customers were commonly directed to contact the company's warehouse for manual research.

Today, companies have eliminated the risk of errors and inaccurate paper-based tracking by implementing advanced information systems. Because of a wide range of data requirements, business intelligence technology systems are used by departments to control and arrange the data that helps unit members meet their key objectives.

Categories of Information Systems

Here are the major categories of information systems applied in organizations, companies, and businesses.

Transaction Processing Systems (TPS)

These handle the day-to-day business data at the operational level of the organization. It systematically processes customer transactions to generate a considerable amount of data. These will be used to learn about customers and their preferences as well as the ever-changing product trends.

A TPS is commonly applied in grocery store checkout cash registers that connect to a network. For example, the Amazon website processes thousands of transactions worldwide every hour. The collected large amount of data is then sent into data warehouses which will be analyzed to provide purchase suggestions to future customers.

Management Information Systems (MIS)

These produce detailed and specified information to help manage a company. MIS is used when TPS data are sorted and organized to support a broad range of managerial decisions. It is used primarily for inventory management and planning systems.

MIS retrieves TPS information, collects it, and generates a report for the management level to have relevant insights on a situation. Summaries and comparisons allow senior managers to optimize the decision-making process to achieve better results.

Most of the report formats include summaries of annual sales data, performance data, and historical records. It provides a systemized way for managers to meet targets and oversee business units.

Office Automation Systems (OAS)

These support a wide range of predefined day-to-day work activities of individuals and businesses. Such systems include word processors (Microsoft Word), spreadsheets (Microsoft Excel), presentation software (Microsoft PowerPoint), collaboration systems for email (Microsoft Outlook), automated calendaring, and thread discussions.

These enable workers to accomplish tasks accordingly and allow close collaboration with others, regardless of location.

Knowledge Management Systems (KMS)

These help organizations to effectively capture, store, and retrieve organizational knowledge to help enhance learning and optimize collaboration efforts to complete tasks. Examples of documents retrieved in a KMS include employee training materials, company policies, and procedures.

These are used by the people involved within an organization to ensure that technical abilities are integrated throughout the company with visuals to help employees make sense of the data.

Decision Support Systems (DSS)

These analyze data and support decision-making. DSSs are utilized by managerial-level employees to resolve problems such as sales forecasting and resource optimization, as well as to support decisions at all levels such as loan and investment analysis.

These are designed to be interactive decision aid that applies models to manipulate data. For example, for historical sales data, various model types are used to create a forecast of future sales. To effectively use this, one technique is to take an average of past sales and adjust it for seasonal changes.

Mobile Applications

These represent a new application model in information systems. Mobile applications represent a niche application model for companies and business systems needing mobile information broadcasting and simple applications.

Mobile applications such as Instagram, WhatsApp, and Office Mobile accomplish well-defined functions, typically on a mobile device. This information system is best for businesses whose customers are mainly targeted online for faster and more convenient transactions.

Intelligent Systems

One of the leading technologies in Intelligent Systems is Artificial Intelligence (AI). AI is a science of allowing information technologies to simulate human intelligence, such as reasoning and learning, and gaining sensing capabilities, such as seeing, hearing, or feeling human experiences.

Intelligent systems significantly impact various areas, including banking and financial management, medical, engineering, and the military. Examples include artificial intelligence systems for analyzing bank loan applications, self-driving cars, and voice assistants like Siri and Alexa.

IS Hardware and Technologies

Information Systems Hardware is an integral part of the Information Systems infrastructure and is classified into two types: **input** and **output** technologies.

Input Technologies

These are used to enter data into a device such as a computer, laptop, or smartphone. Some of the widely used input devices include various types of keyboards or pointing devices like trackpads, graphics tablets, and a mouse.

Moreover, for much-specialized input devices, biometric fingerprint readers for identity authentication and radio frequency identification (RFID) scanners for valuable inventory tracking are used.

Scanners

These are used to convert printed or handwritten text and images into digital data on a computer. Scanners range from small handheld devices to desktop boxes that resemble personal photocopy machines. But rather than duplicating a copy using a photocopy machine, the scanner translates the image into digital data that can be stored and manipulated on the computer.

Smart Cards

These are used for various applications, including verification, building access, or making payments. These usually contain a microprocessor chip, memory circuits, or a magnetic stripe to work.

Some smart cards allow contactless data transmission using RFID technology and Near-Field Communication (NFC), which is used in mobile phones to enable contactless data transmission.

Biometric Devices

These are primarily used for identification and verification purposes. It can read certain body features, including irises, fingerprints, and hand or face measures. Biometric devices are now also integrated into consumer products such as laptops, computer keyboards, or mobile devices, allowing users to access the device by scanning fingerprints or facial features rather than using login credentials.

Voice Input

Voice data is entered into a computer system using *microphones. Speech recognition* makes it possible for computers and smartphones to understand speech and vocabulary. Speech recognition technology can be helpful for users with a disability, medical professionals, airplane pilots, factory workers whose hands get too dirty for keyboards, and mobile users who would prefer not to type while walking or driving

Output Technologies

Output technologies, such as computer monitors or printers, deliver information in a usable format and act on the processed input data.

Printers

These output devices produce a copy of alphanumeric data or documents from a computer. Printers vary in price, performance, and capabilities, such as document size, colored or black and white, resolution, and quality. Most used personal printers include Inkjet, LED, and laser technology.

Monitors

These are used to display information from a computer which can vary depending on the price, performance, and capabilities. Monitors can be in color, black and white, or monochrome. Most modern monitors use liquid crystal display (LCD) technology as they are lighter and thinner than cathode ray tubes (CRT) used in old computer displays and televisions.

Contemporary Application Software

Companies are actively looking for ways to automate business processes to generate bigger revenue and profitability. One way to achieve this is by using application software that lets users write business letters, manage stock portfolios, and manipulate forecasts.

Here are some examples of contemporary application software categorized based on their functions.

Electronic Communication Tools

This application software lets users convey verbal and written information and send files, documents, or other content such as fax, email, voice mail, and blogs.

Examples include the following:

- **Microsoft Outlook** is an email application that secures email, calendar, and files connected in one application.
- **Viber** – a private and fun messaging and calling application that can connect people worldwide.
- **Discord** – a free voice, video, and messaging application used to talk and hang out with their communities, such as gaming.

Electronic Conferencing Tools

These tools allow information sharing and engaging user interactions, such as internet forums and video conferencing.

Examples include the following:

- **Microsoft Teams** – allow users to call with up to 1000 members, with the ability to share screens and record calls.
- **Zoom** – used for audio and video conferencing, webinars, meeting recordings, and livestreams.
- **Google Meet** – the business-oriented version of Google's Hangouts platform is suitable for businesses of all sizes.

Collaboration Management Tools

These are tools that facilitate virtual or co-located meetings and manage group activities.

Examples include the following:

- **Google Docs** – allows users to create joint proposals and reports and keep track of meeting notes using a web browser
- **Microsoft Office Online** – a free version of Office 365 as a web application that includes MS Word, MS Excel, MS PowerPoint, etc., all accessible via a web browser.
- **Microsoft SharePoint** – a simple sharing and collaboration application that centers on teamwork with dynamic and productive team sites for every project team and department.

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