

MANAGEMENT INFORMATION SYSTEM



Purposes of information systems

- Support operations, through the processing and storing of transactions
- Support managerial activities, such as decision making, planning, performance measurement and control

Above two purposes can be broken down into five elements

- Recording transactions
- Decision making
- Planning
- Performance measurement
- Control

Qualities of information

- Accurate
- Complete
- Cost-effective
- Understandable
- Relevant
- Accessible
- Timely
- Easy to use

'Information System' is a general concept that refers to the people, data and activities, both computer-based and manual, that effectively gather, process, store and disseminate information.

Most information systems utilised in a business context today rely on information and communications technologies (ICT).

Information System in different levels in the Organization

System level	System purpose and features	Examples
Strategic	<p>Purpose: To help senior managers with longterm planning.</p> <p>Time focus: Long term</p> <p>Coverage: Whole organisation</p> <p>Uncertainty and subjectivity: High</p> <p>Accuracy: Less critical than at other levels</p>	Key ratios and performance indicators Ad hoc market analysis Strategic plans
Management or Tactical	<p>Purpose: To help middle managers monitor and control.</p> <p>Time focus: Short to medium term</p> <p>Coverage: Department(s) or function(s)</p> <p>Uncertainty and subjectivity: Moderate</p> <p>Accuracy: Moderate level, not as detailed as operational level</p>	Variance analyses Exception reports
Operational	<p>Purpose: To process transactions and help operational managers track the organisation's day-to-day operational activities.</p> <p>Time focus: Immediate</p> <p>Coverage: Specific activities</p> <p>Uncertainty and subjectivity: Low</p> <p>Accuracy: A high level of accuracy is required</p>	Transaction listings Daily receipts and payments Real-time production data Debtors and creditors listings

Transaction processing system (TPS)

A transaction processing system (TPS) performs and records routine transactions. TPSs are used for routine tasks in which data items or transactions must be processed so that operations can continue. TPSs support most business functions in most types of organisation. Transaction processing systems are sometimes referred to as data processing systems (DPSs).

Transaction processing systems					
	Sales/ marketing systems	Manufacturing/ production systems	Finance/ accounting systems	Human resources systems	Other types (eg university)
Major functions of system	<ul style="list-style-type: none"> Sales management Market research Promotion pricing New products 	<ul style="list-style-type: none"> Scheduling Purchasing Shipping/receiving Engineering Operations 	<ul style="list-style-type: none"> Budgeting General ledger Billing Management accounting 	<ul style="list-style-type: none"> Personnel records Benefits Salaries Labour relations Training 	<ul style="list-style-type: none"> Admissions Student academic records Course records Graduates
Major application systems	<ul style="list-style-type: none"> Sales order information system Market research system Pricing system 	<ul style="list-style-type: none"> Materials resource planning Purchase order control Engineering Quality control 	<ul style="list-style-type: none"> General ledger Accounts receivable /payable Budgeting Funds management 	<ul style="list-style-type: none"> Payroll Employee records Employee benefits Career path systems 	<ul style="list-style-type: none"> Registration Student records Curriculum/class control systems Benefactor information system

Management information system (MIS)

Management information systems (MISs) convert data from mainly internal sources into information (eg summary reports, exception reports). This information enables managers to make timely and effective decisions for planning, directing and controlling the activities for which they are responsible.

MISs usually transform data from underlying transaction processing systems into summarised files that are used as the basis for management reports

MISs have the following characteristics:

- Support structured decisions at operational and management control levels
- Designed to report on existing operations
- Have little analytical capability
- Relatively inflexible
- Have an internal focus

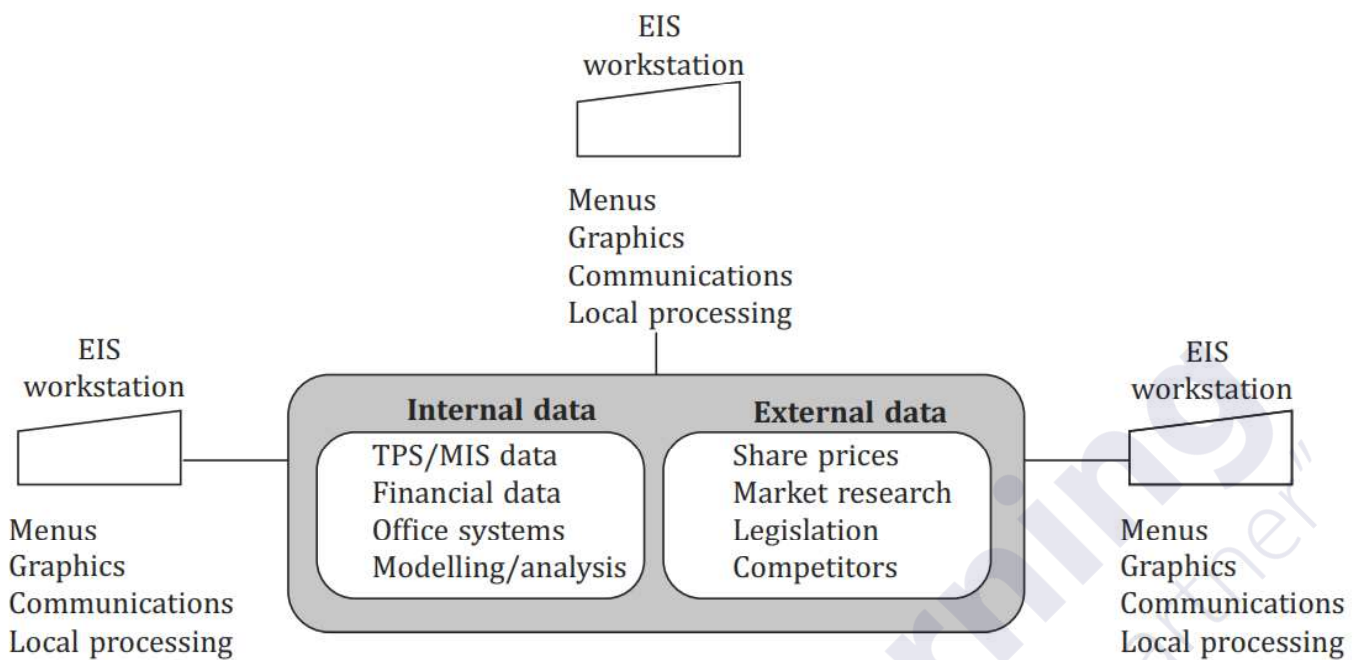
Executive information system (EIS)

An executive information system (EIS) pools data from internal and external sources and makes information available to senior managers in an easy-to-use form. EISs help senior managers make strategic, unstructured decisions.

An EIS should provide senior managers with easy access to key internal and external information. The system summarises and tracks strategically critical information, possibly drawn from internal MIS and DSS, but also including data from external sources eg competitors, legislation and external databases such as Reuters.

Executive information systems are sometimes referred to as Executive Support Systems (ESS) . An ESS/EIS is likely to have the following features.

- Flexibility
- Quick response time
- Sophisticated data analysis and modelling tools A model of a typical EIS follows.



Decision support system (DSS)

Decision support systems (DSSs) combine data and analytical models or data analysis tools to support semi-structured and unstructured decision making.

DSSs are used by management to assist in making decisions on issues which are subject to high levels of uncertainty. They are intended to provide a wide range of alternative information gathering and analytical tools with a major emphasis upon flexibility and user-friendliness. DSSs have more analytical power than other systems, enabling them to analyse and condense large volumes of data into a form that aids managers' decision making. The objective is to allow the manager to consider a number of alternatives and evaluate them under a variety of potential conditions.

Knowledge work system (KWS)

Knowledge work systems (KWSs) are information systems that facilitate the creation and integration of new knowledge into an organisation.

Knowledge workers are people whose jobs primarily involve creating new information and knowledge. They are often members of a profession such as doctors, engineers, lawyers and scientists. Eg:

- Computer-aided design (CAD)
- Computer-aided manufacturing (CAM)
- Specialised financial software that analyses trading situations

Office automation system (OAS)

Office automation systems (OASs) are computer systems designed to increase the productivity of data and information workers. OASs support the major activities performed in a typical office such as document management, facilitating communication and managing data. Eg:

- Word processing, desktop publishing, presentation software
- Digital filing systems
- Email, voice mail, videoconferencing (or teleconferencing)
- Groupware (calendars, address books and journals), intranets, extranets, schedulers
- Spreadsheets, desktop databases

Expert system

An expert system is a form of DSS that allows users to benefit from expert knowledge and information. Such systems consist of a database holding specialised data and rules about what to do in, or how to interpret, a given set of circumstances.

- (a) Check the facts given against its database – Check credit records
- (b) Perform calculations – Check repay ability of the applicant
- (c) Match up other criteria – Security offered for the loan, Type of loan

An **intranet** is a private network inside a company or organisation accessed through browser-like software. Intranets are for the use of staff only; they are not accessible by the public. Intranets are used to provide and distribute information.

An **extranet** allows customers and suppliers to gain limited access to an intranet in order to enhance the speed and efficiency of their business relationship. Put another way, it is an intranet that allows some access by authorised outsiders.

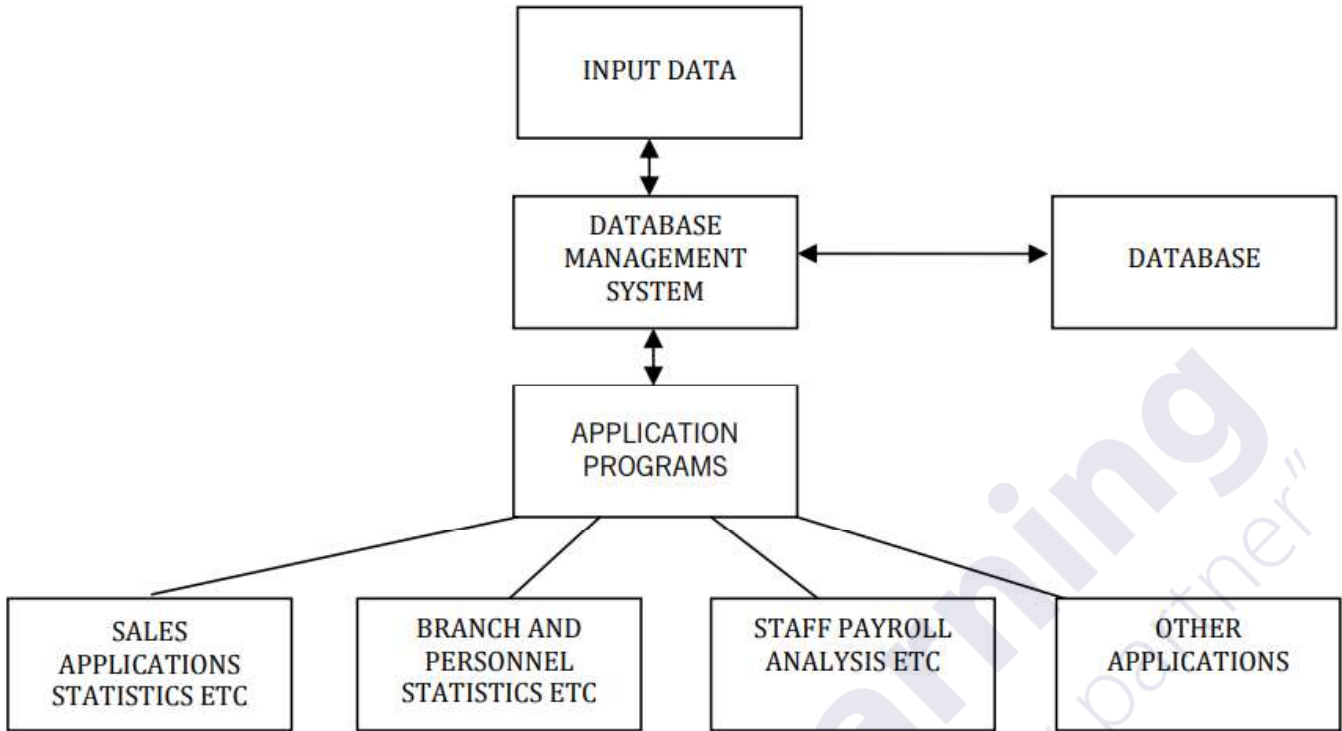
Databases

A database is a collection of data organised to service many applications. The database provides convenient access to data for a wide variety of users.

A database management system (DBMS) is the software that centralises data and manages access to the database. It enables numerous applications to utilize the same files.

The characteristics of a database system

- (a) **Shared**. Different users are able to access the same data for their own processing applications. This removes the need to hold the same data in different files.
- (b) **Controls** to preserve the integrity of the database.
- (c) **Flexibility**. The database system should provide for the needs of different users, who each have their own processing requirements and data access methods. The database should be capable of evolving to meet future needs.



Enterprise-wide systems

Enterprise-wide systems are designed to co-ordinate all business functions, resources and information, wherever they are geographically located. Eg: ERP

Distributed Data Processing

In some enterprises, even though the system spans the whole organisation, individual locations have their own specific data processing capability, via a direct link to the central database. This is known as distributed data processing (DDP). The link is provided through a network – a connection between devices that allows them to communicate. The two main types of network are local area networks (LANs) and wide area networks (WANs)

Enterprise resource planning (ERP) software is an example of an enterprise wide system. A relatively recent development has been the development of web based enterprise-wide software.

Advantages of software packages rather than customized

- **Cost savings** should be available because the vendor can spread the cost of systems development over a large number of installations
- **Time savings** should be very significant, since developing a new application can be extremely time consuming
- **Quality** should be guaranteed both by the vendor and, except for launch customers, be earlier installation by other customers
- **Documentation and training** should be immediately available and of high quality, since these are important selling points
- **Maintenance support** should be good and would normally include help desk service and routine software amendments to correct faults as they become apparent
- **Comprehensive package evaluation** should be possible. This might include use for a trial period and visits to existing installations

Disadvantages

- Property rights over the software usually reside with the supplier. This has three important potential consequences for the user
 1. The supplier controls future development of the software
 2. The supplier controls the support available and may discontinue it, forcing the customer to purchase an upgrade
 3. The supplier may sell the product rights to another supplier, perhaps to the prejudice of the customer
- The financial stability and survival of the supplier is not guaranteed
- Competitive advantage cannot be obtained from standard software packages available to all
- Inadequate performance – Since it was general system / Not customized system
- Legal redress for lack of functionality will almost certainly not be available
- Changing requirements can erode a package's functionality.

Knowledge management systems

Knowledge management systems (KMSs) record and store the knowledge held within an organisation.

Benefits of a KMS include:

- Valuable data is preserved for the future and not lost, for example, when an employee leaves.
- The data is easily shared.
- Data duplication (or data redundancy) is avoided.
- It allows employees to 'get up to speed' on knowledge quickly and easily and this may reduce the time they need to spend training.

Customer relationship management systems

Customer relationship management (CRM) systems are software applications which specialise in providing information concerning an organisation's products, services and customers

PROJECT MANAGEMENT

A **project** is 'an undertaking that has a beginning and an end and is carried out to meet established goals within cost, schedule and quality objectives'. (Haynes, Project Management)

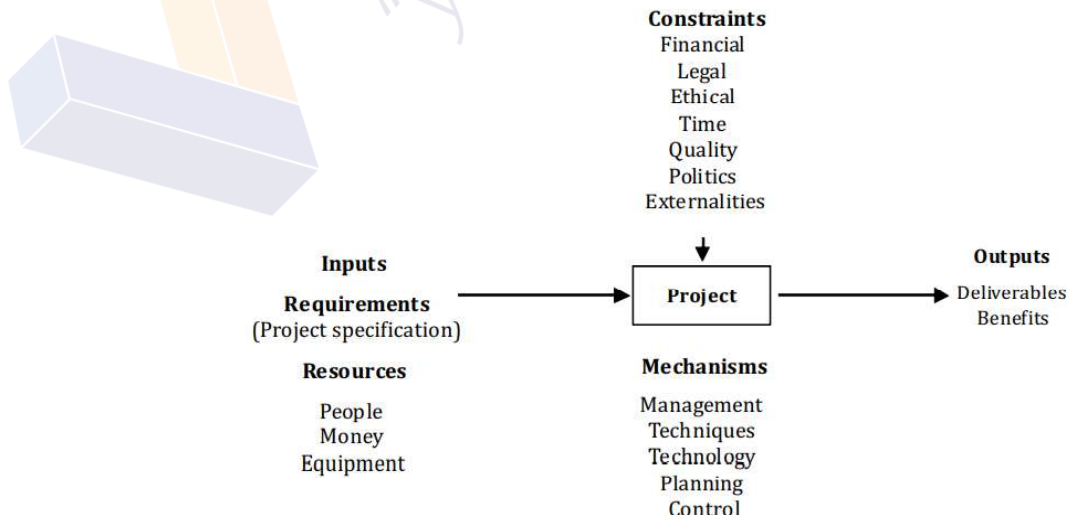
Resources are the money, facilities, supplies, services and people allocated to the project.

How does project working differ from 'business as usual'?

Projects	Operations ('business as usual')
Have a defined beginning and end	Ongoing
Have resources allocated specifically to them, although often on a shared basis	Resources used 'full-time'
Are often unique or intended to be done only once	Many recurring tasks
Follow a plan towards a clear intended end result	Goals and deadlines are more general
Often cut across organisational and functional lines	Usually follows the organisation or functional structure

Examples of projects

- Producing a new product, service or object
- Changing the structure of an organisation
- Developing or modifying a new information system
- Implementing a new business procedure or process



A framework for project management: the 7S model

Project management differs in scope from ongoing operational management and employs its own specialised and distinctive techniques. However, it is embedded in the wider management environment and depends for its success on a range of considerations that will be familiar to you in general terms. These considerations are referred to by Maylor as 7S.

- Staff
- Stakeholders (in McKinsey: Shared Values)
- Structure
- Systems
- Strategy
- Style
- Skills

What is Project Management

Project management - The application of processes, methods, knowledge, skills and experience to achieve the project objectives in a timely, cost-effective manner.

The objective of project management is a successful project. A project will be deemed successful if it is completed at the specified level of **quality, on time** and within **budget**.

Management challenges of project working

- Teambuilding
- Expected problems
- Unexpected problems
- Delayed benefit
- Specialists
- Potential for conflict

Why do projects go wrong?

- (a) Unproven technology
- (b) Changing client specifications
- (c) Politics - Lack of senior management support
- (d) Poor project management
 - (i) Over-optimism.
 - (ii) Over-promotion of technical staff
 - (iii) Poor planning
 - (iv) Poor control

Project success factors – By An article in Financial Management (June 2006)

- (a) Proper planning with regard to time, cost and resource constraints
- (b) The involvement of users (among other key stakeholders) in development and delivery processes, to ensure that their needs are met (without subsequent changes)
- (c) Competent and committed project staff, with the right skills
- (d) Ownership by senior managers on the basis of a clear business case
- (e) Careful management of constraints: control procedures for monitoring the pace, money/resource usage and conformance of the project
- (f) Risk assessment and management, allowing for risk reduction and contingency planning
- (g) Clear criteria for business case and precise measurements of performance, so that project success can be evaluated and lessons learned.

PRINCE2

The acronym PRINCE stands for PProjects IN Controlled Environments and is a registered trademark of the UK Office for Government Commerce (OGC). Its main features are as follows:

- (a) PRINCE2 may be used to manage any project of any size or complexity, since the system is scalable.
- (b) A clear management structure of roles and responsibilities within the system is defined; this may be adapted according to the skills available within the organisation and the nature of the project.
- (c) The system focuses on delivering results (called 'products') rather than on the technical processes of project management. The users of the final endproduct are actively involved in the project.
- (d) It is a fundamental aspect of PRINCE2 that a project is driven by its business case; the continuing viability of the project is checked at regular intervals.

Components

Components are rather conceptual in nature, being matters to which proper consideration must be given if the project is to succeed, but also varying widely in actual nature from project to project. There are seven key themes that need to be continually addressed.

- (a) Business case
- (b) Organisation
- (c) Plans
- (d) Risk
- (e) Progress
- (f) Quality
- (g) Issues and changes

Processes

Project processes are more concrete than components, being essentially groups of linked activities. There are eight processes.

- (a) Directing a project
- (b) Starting up a project
- (c) Initiating a project
- (d) Planning
- (e) Controlling a stage
- (f) Managing stage boundaries
- (g) Managing product delivery
- (h) Closing a project



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