Management Information Systems

Agenda

What is management information systems

General system theory (Science, shared structure)

Management system

Information system

Hardware system

Software system

- Communication system
- Information and communication technology (philosophy)
- Information systems development methodology (S. Approach) (philosophy), evolutionary development
- System Analysis & Design (structured approach, decomp.)
- Organization Structure
- Business function diagram

- Data flow diagram
- Entity-Attribute Model
- Relational Model
- Decision making process as central nerve of Management functions
- Decision making representing the whole process of management (decomposed)
- Decision making as a system on its on right (emergent model)

- Decision making Simon Model (traditional linear approach)
- Strategic information systems
- Strategy and tactics
- Internal and external environment
- Strengths and weaknesses
- Opportunities and threats

- Business process re-engineering
- Restructuring process (remodeling process)
- Total quality and Information system
- Information systems as a viable model for all disciplines to follow
- Systemizing business disciplines

- Information systems and globalization
- Worldwide web
- World class TV channels
- World institutions and organizations
- World economic forum
- Internet as the global information system
- Internet as business context (business transactions)
- Information systems and other disciplines (model)
- Relationship between information and science
- Relationship between system science and globalization

- Relationship between system science and learning
- Relationship between system science and media and information
- Relationship between system science and education
- The system approach as the main instrument for studying management information systems
- Enterprise Applications (technologically-based)
- Enterprise Resource planning system
- Data ware house system

- Structured approach as the sole universal modeling language
- Structured analysis, structured design, and structured programming
- Structured versus object- oriented
- Holistic, integrated versus linear and partial approach
- GST versus General relativity theory
- Information system theory versus relativity theory
- Management Information systems historical view, transaction processing system, management information system, decision support.
- System model, viable, global, sustainable and research-based
- Standardization, Integration, unification, and total quality

- **MIS project**
- Analysis phase (responding to an organizational problem)
- Design phase
- Implementation phase (**Access**)
- Generation of queries
- Transfer of queries to **Excel** (simple mathematical calculations e.g. ratios, percentages, means and variances….etc) and construct charts (normal models)
- Managerial phase (full report in **Word** about the nature of the problem and how it arises and how you respond to resolve it via the process followed)

- System model and synergistic behavior
- System model and psychological validity (Humphreys)
- System model as appropriate technology (Land)
- Information systems as formal systems
- Information systems and flattening organization structure
- **Sales and marketing information systems**: systems that identify customers for the firm's products or services to meet customers' needs, promote these products and services, sell the product and services, and provide on-going customer support.

- **Manufacturing and production information system**

systems that deal with planning, development, and production of product and services, and with controlling the flow production.

Finance and accounting information systems

Systems that keep track of the firm's financial assets and fund flows

Human resource information systems

Systems that maintains employee records, track employee skills, job performance, and training; and support planning for employee compensation and career development

- Enterprise applications systems that can co-ordinate activities, decisions, and knowledge across many different functions, levels, and business units in a firm.
- Enterprise systems can integrate the key business processes of an entire firm into a single software system that allows information to flow seamlessly throughout the organization. These systems focus primarily on internal processes but may include transactions with vendors and customers. (see figure 2-14).

- **Supply chain management**

close linkage and coordination of activities involved in buying, making and moving a product.

Supply chain

Network of organizations and business processes for procuring materials, transforming raw materials into intermediate and finished products, and distributing the finished products to customers.

- **Collaborative commerce**

The use of digital technologies to enable multiple organizations to collaboratively design, develop, build, and manage products through their life cycle. (see figure 2-16).

Classical model of management (Management theory)

Description of management that focuses on its formal functions of planning, organizing, coordinating, deciding and controlling

Managerial roles

- Strategic decisions, managerial control and operational control
- Structured, semistructured and unstructured decisions
- **Simon model**
- Intelligence, design, choice and implementation
- **Emergent model**
- Intelligence, design, choice, evaluation and implementation

- Value chain model

Primary activities, support activities

Value web

Customer-driven network of independent firms who use information technology to coordinate their value chains to collectively produce a product or service for the market. (see figure 3-12).

Porters competitive forces model (See figure 3-15).

The new competitive forces model (see figure 3-16).

Enterprise software

- Set of integrated modules for applications such as sales and distribution, financial accounting, investment management, materials management, production planning, plant maintenance, and human resources that allow data to be used by multiple functions and business processes.

Database

A collection of data organized to service many applications at the same time by storing and managing data so that they appear to be on one location.

- **Database management system (DBMS)**

Special software to create and maintain a database and enable individual business applications to extract the data they need without having to create separate files or data definitions in their computer programs.

Structured Query language (SQL)

The standard data manipulation language for relational database management systems.

Relational DBMS

A type of logical database model that treats data as if they were in two dimensional tables. It can relate data stored in one table to data in another as long as the two tables share a common data element.

- **Entity-relationship diagram**

A methodology (philosophy) for documenting databases illustrating the relationship between various entities in the database.

Normalization

The process of creating small stable data structures (decomposition) from complex groups of data when designing a relational database.

Data warehouse

A database, with reporting and query tools, that stores current and historical data extracted from various operational systems and consolidated for management reporting and analysis.

- **Open systems Interconnect (OSI)**

International system model for linking different types of computers and networks

Model

An abstract representation that illustrates the components or relationship of a phenomena (Man as a Model ALLAH (SWT))

Information systems plan

The rationale, the current situation, the management strategy, the implementation plan, and the budget

- **Enterprise analysis**

  Analysis of organization wide information requirements that examines the entire organization in terms of organizational units, functions, processes, and data elements, helps identify key entities and attributes in the organization data

- **Critical success factors**

  Small numbers of easily identifiable operational goals shaped by the industry, the firm, the manager, the broader environment that are believed to assure the success of an organization. Used to determine the success of an organization. It determines the organizational requirement of an organization

Automation

- Using the computer to speed up the performance of existing tasks.

Rationalization of procedures

- The streamlining of standard operating procedures, eliminating obvious bottlenecks, so that automations makes operating procedures more efficient

Business process re-engineering

- The radical redesign of business processes, combing steps to cut waste and eliminating repetitive, paper intensive tasks in order to improve cost, quality, and service, and to maximize the benefits of information technology i.e. systemizing business procedures (full application of GST).

Paradigm shift

- Radical reconceptualization of the nature of the business and the nature of the organization.

Work flow management

- The process of streamlining business procedures so that documents can be moved easily and efficiently from one location to another

Total quality management

- A concept that makes quality control a responsibility to be shared by all people in organization. Standardizing (systemizing) and integrating all aspects of management and Engineering

Six sigma

- A specific measure of quality, representing 3.4 defects per million opportunities, used to designate a set of methodologies and techniques for improving quality and reducing cost.

Benchmarking

- Setting strict standards for products, services, or activities and measuring organizational performance against those standards

System development

- The activities that go into producing an information systems solution to an organizational problem of opportunity

Systems analysis

- The analysis of a problem that the organization will try to solve with an information system

Feasibility study

- As part of the system analysis process, the way to determine whether the solution is achievable, given the organization's resources and constraints

Information requirement

- A detailed statement of the information needs that a new system must satisfy, identifies who needs what information, and when, where, and how the information is needed.

Systems design

- Details how a system will meet the information requirements as determined by the system analysis

Implementation

- Parallel strategy, direct cutover, pilot study, phased approach, documentation and production

- **Post-implementation Audit**

  Formal review process conducted after a system has been placed in production to determine how well the system has met its original objectives.

- **Maintenance**

  Changes in hardware, software, documentation, or procedures to a production system to correct errors, meet new requirements, or improve processing efficiency

Systems life cycle

- A traditional methodology for developing an information system that partitions the system development process into formal stages that must be completed sequentially with a very formal division of labor between end users and information systems specialists

Prototyping

- The process of building an experimental system quickly and inexpensively for demonstration and evaluation so that the users can better determine information requirement

Prototype

- The preliminary working version of an information system for demonstration and evaluation purposes

Iterative

- A process of repeating over and over again the steps to build a system

Customization

- A detailed list of questions submitted to vendors of software and other services to determine how well the vendor's product can meet the organization's specific requirements

Implementation and change

- All organizational activities working towards the adoption, management, and routinization of an innovation

Change agent

- In the context of implementation, the individual acting as the catalyst during the change process to ensure successful organizational adaptation to a new system or innovation

User-designer communication gap

- The difference in backgrounds, interests, and priorities that impede communication and problem solving among end users and information systems specialists.

Internal integration tools

- Project management technique that ensures that the implementation team operates as a cohesive unit

Formal planning tools

- Project management techniques that structures and sequences tasks, budgeting time, money, and technical resources required to complete the tasks

Formal control tools

- Project management technique that helps monitor the progress towards completion of a task and fulfillment towards goals

External integration tools

- Project management technique that links the work of implementation team to that of the users at all organizational levels

Counter implementation

- A deliberate strategy to thwart the implementation of an information system or an innovation in an organization

Organizational impact analysis

- Study of the way a proposed system will affect organizational structure, attitudes, decision making and operations

Socio-technical design

- Design to produce information systems that blend technical efficiency with sensitivity to organizational and human needs

Development methodology

- A collection of methods, one or more for every activity within every phase of a development project

Structured

- Refers to the fact that techniques are carefully drawn up, step by step, with each step building on a previous one.

Structured analysis

- A method for defining system inputs, processes, and outputs, controls and storage and for partitioning systems into subsystems or modules that show a logical graphic model of information flow

Data flow diagrams

- Primary tool for structured analysis that graphically illustrates a system component processes and the flow of data between them

Process specification

- Describe the logic of the processes occurring within the lowest levels of a data flow diagram

Structured design

- Software design discipline encompassing a set of design rules and techniques for designing systems from the top-down in hierarchical fashion

Unified and Universal modeling language (UML)

Resource allocation

- The determination of how costs, time and personnel are assigned to different phases of a system development project

Global culture

- The development of common expectations, shared artifacts, and social norms among different cultures and people

Core systems

- Systems that support functions that are absolutely critical to the organization

- **Assessment**
- The project carries 20% of the whole mark. It is a group project and the final exam will be related to the project. Thus you need to understand each and every piece of it.
- The group will present their work to a wider public