



MANAGEMENT INFORMATION SYSTEM

JV'n Dr. Shruti Mishra

JAYOTI VIDYAPEETH WOMEN'S UNIVERSITY, JAIPUR

UGC Approved Under 2(f) & 12(b) | NAAC Accredited | Recognized by Statutory Councils

Printed by : JAYOTI PUBLICATION DESK Published by : *Women University Press* Jayoti Vidyapeeth Women's University, Jaipur

Faculty of Law & Governance

Title: MANAGEMENT INFORMATION SYSTEM

Author NameDr. Shruti Mishra

Published By: Women University Press

Publisher's Address: Jayoti Vidyapeeth Women's University, Jaipur Vedaant Gyan Valley, Village-Jharna, Mahala Jobner Link Road, NH-8 Jaipur Ajmer Express Way, Jaipur-303122, Rajasthan (INDIA)

Printer's Detail: Jayoti Publication Desk

Edition Detail: I

ISBN: 978-93-90892-09-9

Copyright ©- Jayoti Vidyapeeth Women's University, Jaipur

MANAGEMENT INFORMATION SYSTEM UNIT- 1 (BLOCK 1)

CONTENTS OF THE UNIT

CHAPTER-1: INTRODUCTION

Introduction to Management Information Systems

History of MIS

Impact of MIS

Role and Importance of MIS

Types of Computer and Hardware Support for MIS

Summary

Self-Assessment Exercise

CHAPTER – 2 : CONCEPTUAL FOUNDATIONS OF MIS

Introduction to Conceptual Foundations of MIS

The Decision-Making Process

System Approach to Problem Solving

Summary

Self-Assessment Exercise

CHAPTER 3: TYPES OF MIS

Introduction to the Kinds of Information System

Types of Management Information System

Specification of Information Systems

Summary

Self- Assessment Exercise

CHAPTER 4: Planning and Control

Introduction to Planning and Control

Differences between planning and Control Information

System Analysis

System Design

Summary

Self-Assessment Exercise

CHAPTER 5: MIS Development Process (MISDP)

Introduction to MIS Planning and Development

Planning for MIS

MIS Development Process (MISDP)

Summary

Self- Assessment Exercise

CHAPTER 6: BUSINESS PROCESS REENGINEERING (BPR)

Introduction to business Process Reengineering

Business Process Re engineering Steps

BPR- Current Focus

Summary

Self-Assessment Exercise

UNIT-2 (BLOCK 2)

CHAPTER 7: MIS ORGANIZATION STRUCTURE

Introduction to MIS at Management levels

Strategic Level Planning, Operational Level Planning

Economic and Behavior Theories

Summary

Self-Assessment Exercise

Introduction to	Basics of ERP			
Evolution of EF	2P			
Enterprise Systems in Large Organizations				
Benefits and Challenges of Enterprise System				
Summary				
Self-Assessmen	t Exercise			
CHAPTER 9: E-	ENTERPRISE S	SYSTEM		
Introduction to	Managing the E-e	nterprise		
Organisation of	Business in an E-	enterprise		
9.3.E-business,	E-commerce,	E-communication,		
collaboration				
Summary				
Self-Assessmen	t Exercise			
	UNIT -3 (BL	OCK 3)		
Chapter 10: Data	abase Manageme	nt Systems		
Introduction to	DBMS			
Types of Databa	ase Users			
Designing of D	BMS			
Summary				
C 1C A	· F ·			

BLOCK I

INTRODUCTION

The Present block consist one unit with two credits and having six chapters in it. These chapters consist of Introduction of Management Information System, History of MIS and Impact of MIS. This chapter deals with Role and Importance of MIS with types of computer and hardware support for MIS.

CHAPTER 1 INTRODUCTION

OBJECTIVES

After completion of this lesson the student will able to understand: Introduction to Management Information System History of MIS Impact of MIS Role and Importance of MIS Types of Computer and Hardware Support for MIS Summary Self- Assessment Exercise

INTRODUCTION TO MANAGEMENT INFORMATION SYSTEM

Data Information System is an ancient data method that people have long been using for better management and decision-making in science. Management Information System relies primarily on information, which is an important component of any management information system. Knowledge is Control Knowledge System's most Important tool. We are all aware that knowledge is a crucial element in our lives. Just as our body needs air, water and clothes, so too are we dependent on knowledge. To make life more exciting and to get the impression that we are part of the social system, we want to know our environment and we need knowledge for that. Knowledge is an important input for achieving our objectives, such as learning to support one another and being an integral part of society. In reality, information systems are not a modern concept; they are as old as the hills. From biblical times, in all times, humans have made use of knowledge produced by information systems. There were structures where information was generated and communicated. Kings and rulers had their own ways to design information systems and get knowledge from them. The primary aim of these information systems was to assess the well-being of their people in the kingdom, and to administer the kingdom efficiently and effectively. The church a disown method of telling. Tainali Rama, Akbar, and many others have had outstanding information management systems in place in India. Similarly, the Venice merchants had their own completely functioning professional information management system inspiration.

Definition:

Management information system is a system consisting of people, machines, procedures, databases and data models, as its elements. The system gathers data from the internal and external sources of an Organization

Meaning:

Management information system is an acronym of three words, viz., Management, information, system. in order to fully understand the term MIS, let us try to understand these three words.

Management: Management is the art of getting things done through and with the people in formally organized groups.

Managerial function: Planning Organizing Staffing Directing and Controlling



Management hierarchy:

(Middle Management)

Operational Control (bottom management) Information: Information is data that is processed and presented in a way that assists decision making. it can contain a surprise factor, minimize confusion, or trigger a manager to take an action. Historical records typically take the form of data. Unlike information, raw data may not shock us, may not organize and may not add anything to our knowledge.

Data \longrightarrow Processing \longrightarrow Information System: Because of its usage in different contexts the word framework is the most loosely kept concept in management literature. However, a system may be described as a collection of elements that are combined to achieve a common goal. The elements relate to each other and are interdependent. Input, method and output can be interpreted as the collection of elements for a device. Multiple inputs if a system has one; these inputs if passed through a transformation mechanism to turn those inputs into outputs. The three components of a system are

Input Process Output

History of Management Information System:

The information management history can be traced back to Paris Industrial Exhibition in 1801. Joseph Marie Charles Jacquard brought punch cards to the world over there. These cards, which were similar to the computer punch cards used through most of the 20th century, were used to create intricate patterns in fabric while weaving looms.

1980's

From the mid-80s, when they were nothing more than on-screen calculators, print management information systems were used.

They automated and arranged some of the more routine administrative tasks usually performed in a print shop, using minimal computer processing resources.

1984

1984, estimation was revolutionized by implementing a device which could repetitively and without variation produce a quotation message, denouncing quote pads and hand-typed letters to history at once. Just as thrilling was the opportunity to retrieve a quote up to three months old, review it in a matter of minutes, and reprint it. The hours spent rummaging through filing cabinets and manila files had gone, only to have to recalculate the quote again in order to fix a specification update.

1990s

While the hardware's usability and computing power improved rapidly through the 1990's, so did the complexity of the applications it would run.

Computerized systems for Job Costing, buying stock, Output Management and Finance came into common use. The amount of administration was further reduced as each new department was conquered, to every relief of these early MIS pioneers.

This avoided the arduous task of manually collecting and gathering information for coverage. Managers discovered their new MIS's seemingly infinite possibilities and started overworking their dot matrix printers with the push of a button, creating rivers of papers. All of this happened at a time when the UK alone had more than 20,000 printers and digital printing had not yet been developed.

1993

The Indigo was introduced in 1993 and the world of printing changed. All the printing industry and the MIS business were down on the spokes. For digital printing companies had to start quoting and MIS's weren't upto that because people didn't know how to

pricing items. This was one of the birthplaces of print production companies. It was all about quality and running a MIS dropped by the wayside. No body knew what products to use because they were priced too low as they competed against giants of print management. The industry had forgotten everything about what a MIS was. Customer expectations have also begun in creasing.

2000s

The Indigo was introduced in 1993 and the world of printing changed. All the printing industry and the MIS business were down on the spokes. For digital printing companies had to start quoting and MISs weren't up to that because people didn't know how to pricing items. This was one of the birthplace of print production companies. It was all about quality and running a MIS dropped by the way side. No body knew what products to use because they were priced too low as they competed against giants of print management. The industry had forgotten everything about what a MIS was. Customer expectations have also begun in creasing.

The.com bubble exploded in the early nineties, bringing with with it the giants of print management.

JDF v1 was introduced in 2001, in the wake of this. It promised to unify machine suppliers into the printing industry and offer seamless automation. For 'Method' JDF promised to do

what PDF did for 'Content.

MIS providers had to react and, although not immediately, they started to position them selves as the central hub of a print company rather than being the distant cousin who had not been allowed to visit very of ten before.

2004

The 2004 "JDF-Drupa" was used to release the JDF 1.2 specifications that included a range of significant design improvements, making it JDF's first truly "mature" version. Many MIS providers showcased early releases of their JDF-enabled applications or gathered input from customers for potential innovations. And now, in addition to being an administrative framework that provides prediction, fulfillment and customer monitoring, MIS systems have become central to the production hub. MIS seemed to have been the target of yet another diversion, and lost its way.

2006

In steps the BPIF is launching a report on Vision in Print (ViP) to get all of us back to basics. Partly sponsored by the Department of Trade and Industry, ViP aimed to determine how printers were using their internal processes and to make suggestions on best practices.

The report's outcome was a revelation; virtually all MIS users had limited their device use to the point that they were nothing more than glorified administration systems. MIS developers were told that their users weren't as sophisticated as those using the 20-year- old solutions. Al though there have been many structural changes in assisting with every day activities, very few strategic decisions were taken by company owners based on data from their management information systems. The problem seemed to be that both consumers and developers had lost sight of why the industry in the first place needed MIS solutions.

2007

The end of the naughtiest saw Moon pig's likes, 'The Dogs Doodah' and Funky Pigeon becoming the top online web-to-print firms on the market. As printers all claimed to be online and linked to their customer base, MIS providers were drawn into the ecommerce community. Several MIS firms have attempted to build their own, contributing to a variety of various web-to-print providers.

2010s

Things started to fall in the 2010s. The web-to-print industry matured and JDF eventually began delivering on the commitments it gave. Automation has become a focal point for MIS.

Impact of MIS

MIS plays a very important role in the Organization; it influences the operations, efficiency and profitability of the company.

The effect of MIS on the functions is becoming more effective in its management with a good MIS supporting marketing, finance, development, and personnel management. The practical goals are easy to track and control. The function al managers are aware of the success, successes and failures in the project and the goals. The manager is kept alert by having some information suggesting and likely patterns in different aspects of the market. It assists in forecasting and planning long-term perspectives.

The attention of the manager is bought to a situation that is anticipated in nature, forcing him to take an action or a decision on this matter. Disciplined information management system provides a database framework and a base of expertise for all employees with in the company. The knowledge is provided in such a way that mixing and analysis can be used instantly, saving the precious time for the manager.

The MIS produces another effect within the company that relates to the business understanding itself. The MIS begins by defining the data, the entity and its attributes. This uses, respectively, a dictionary of data, object and attributes designed to produce knowledge within the organization. Since all the information systems use the dictionary, the company has a shared definition of words and phrases, providing consistency in communication and a clear understanding of an occurrence within the company.

The MIS produces another effect within the company that relates to the business understanding itself. The MIS begins by defining the data, the entity and its attributes. This uses, respectively, a dictionary of data, object and attributes designed to produce knowledge within the Organisation. Since all the information systems use the dictionary, the company has a shared definition of words and phrases, providing consistency in communication and a clear understanding of an occurrence within the company.

MIS 'priorities and expectations are the results of company objectives and priorities. It helps indirectly by supplying the company with the necessary information to move the whole company in one direction towards the organizational goals and objectives.

A well-designed program with a manager emphasis is having an effect on the managerial performance. The knowledge fund motivate san educated boss to use arrange of management methods. This makes him resort to work outs such as creativity and modeling. Using machines helps him to use the tools and techniques which cannot be used manually. The ready-made packages simplify the mission. The effect is on the ability to succeed in management. It considerably enhances decision-making capacity.

Since the MIS operates on the basic system, such as transaction processing and database, the clerical work drudgery is moved to the computerized system, thus relieving the human mind for better work. It can be found that in the organization, a lot of man power is involved in this operation. Seventy(70)percent of the time it takes to log, scan, process and communicate. This Error impacts directly on the overhead. This produces awareness — the organization's working culture.

Role and Importance of MIS

Role of MIS:

One may equate the role of the MIS in an organization with the role of the heart in the body. The blood is the knowledge, and the heart of MIS. In the body the heart plays the task of supplying all the elements of the body including the brain with fresh blood. The heart works faster and when needed it pumps more blood. It regulates and monitors, processes and sends the incoming impure blood to destination in the quantity required. In normal course and even in crisis it fulfills the needs of blood supply to human body.

The organization's MIS plays exactly the same role. The program ensures that appropriated are obtained from the various sources, processed and forwarded to all the desperate destinations further. The program is supposed to satisfy an individual's knowledge needs, a community of individuals, the management functionaries: the managers and the to management.

Here are some of the MIS's main roles:

- a) MIS meets the diverse needs across a range of systems such as query system, research system, modeling system and decision support system.
- b) The MIS assists with strategic planning, quality oversight, organizational oversight and handling of transactions. The MIS helps clerical workers in transaction.
- c) processing and answers the queries on the data pertaining to the transaction, the status

of a particular record and reference on a variety of documents.

- d) The MIS aids junior management personnel in providing organizational preparation, scheduling and reporting data and supports them further in tactical decision-making to address out-of- control situations.
- e) The MIS assists middle management in the short-term preparation, setting of goals and managing of company functions. It is helped by the use of the planning and control management tools.
- f) The MIS assists top-level management in setting priorities, strategic planning and the development and execution of business strategies.
- g) The MIS plays the role of knowledge generation, communication, problem recognition and assists in decision- making processes. Hence the MIS plays a crucial role in an organization's management, governance, and activity.

Importance of MIS:

It goes without saying that all managerial functions are carried out through decision-making; timely and accurate information is necessary for taking informed decisions and is procured through a reasonable and well-structured system of gathering, storing and disseminating information to decision-makers. Such a management approach is popularly known as MIS. In today's world of ever- increasing complexities of business as well as business organization, a properly planned, evaluated, built and maintained MIS is needed to allow management to take swift and reasonable decisions in a timely, reliable and useful manner, in order to serve and expand. Second, in this information age in which information doubles every two or three years, a manager as to process a large amount of data; failure of which he might end up making a strong decision that may prove to be very costly for the company.

In such a situation manager needs to be equipped with certain tools or a program that can support them in their demanding decision- making function. Because of the above factors, MIS is considered of permanent importance today, often known as an organization's name Base. Such a program assists decision-makers in organizations by presenting information at specific decision- making points and thereby significantly assisting the organization. By presenting knowledge at different decision-making levels and thereby enabling companies to achieve their defined priorities and objectives. In the other hand, the MIS that is not properly prepared for research, design, implementation or poor maintenance may provide unreliable, outdated or obsolete information that may prove fatal to the Organization. In other words, today organizations simply cannot thrive and expand without MIS being properly planned, built, implemented, and maintained. It has been well recognized that MIS allows even small organizations to more than off set the economies of scale enjoyed by their larger rivals and the us helps to give other organizations a competitive advantage

Types and Hardware of Computer of MIS



Figure: 1

i. Analog Computer

Analog computers are used for the continuous data processing. Analog computers represent physical variables by quantity. Thus, any computer that solves problem by translating physical conditions such as flow, temperature, pressure, angular position or voltage into related mechanical or electrical related circuits as an analog for the physical phenomenon being investigated generally is a computer that uses an analog quantity and produces analog values as output. And a continuous assessment of an analog device. Analog machines are really fast. We achieve very fast results. Yet its findings are roughly right. Special purpose machines are also the analog machines.



ii. Digital Computer.

Digital machine with the help of digits or numbers represents physical quantities. These numbers are used to perform Mathematical calculations and, based on the user's data, make a rational decision to draw a conclusion. Digital computers divided into 3 groups. Those are:



Main Frame Computer

Mainframe computers are called the most powerful, biggest, and fastest or speediest. These machines are used in large businesses, warehouses, organizations, etc. The mainframe computers are the costliestcomputers;theycostover20millionrupees.150usersare able to operate on one C.P.U in these machines. The mainframes can handle 1 to 8 bits at a time. They have several hundred megabytes of primary storage and run at a pace in nano-second measures.



• Mini Computer

Mini computers are smaller than mainframes, in size as well as other facilities like power, storage space and other services. They're flexible they can be mounted wherever they're required. Their speeds are rated between one and fifty million instructions per second (MIPS). They have primary storage with direct access storage system in hundred to three hundred mega by the range.



• Micro Computer

These are the tiniest machine set. In the early 70's they were launched with less storage space and processing speed. Today's micro-computers are tantamount to yesterday's mini computers in terms of efficiency and processing. These are often called "a chip's machine" because all of the circuitry is house in one tiny chip. The micro computer shave a wide variety of applications including uses that can be plugged into any wall as a portable device.



iii. Hybrid Computer

Different specially built computers combine the advantages of analog and digital computers when operating as a machine, with both digital and analog characteristics. Hybrid computers are widely used in process control systems where close representation with the physical world is required. The hybrid system offers the good accuracy that analog computers can achieve, and the greater control that is possible with digital computers, plus the ability to accept input data in any form.



Hardware of Computer:



Figure: 2

➢ Input Unit

- Central Processing Unit (CPU) Consisting of ALU (Arithmetic Logic Unit), Control Unit and Memory Unit
- Secondary Storage Unit
- ➢ Output Unit

The whole discussion is here we discussed:

➤ Input Unit:

This unit is used for entering data and programs into the computer system by the user for processing.

> Storage Unit:

The storage unit is used for storing data and instructions before and after processing.

> Output Unit:

The output unit is used for storing there salt as output produced by the computer after processing.

Central Processing Unit(CPU):

The task of performing operations like arithmetic and logical operations is called processing. The Central Processing Unit (CPU) takes data and instructions from the storage. Unit and makes all sorts of calculations based on the instructions given and the type of data provided. It is then sent back to the storage unit. CPU includes Arithmetic logic unit (ALU) and control unit(CU).

 \checkmark Arithmetic Logic Unit: All calculations and comparisons, based on the instructions provided, are carried out with in the ALU. It performs arithmetic functions like addition,

subtraction, multiplication, division and also logical operations like greater than, less than and equal to etc.

➤ Control Unit: Controlling of all operations like input, processing and output are performed by control unit. It takes care of step by step processing of all operations inside the computer.

• Memory

Computer's memory can be classified into two types:

1. Primary memory

2. Secondary memory

1. **Primary Memory**

It can be classified into two types: -

✓ **RAM** (Random Access Memory)

✓ **ROM** (Read Only Memory)

 \checkmark **RAM or Random-Access Memory** is the unit in a computer system. It is the place in a computer where the operating system, application programs and the data in current use are kept temporarily so that they can be accessed by the computer's processor. It is said to be' volatile' since its contents are accessible only as long as the computer is on. The contents of RAM are no more available once the computer is turned off.

 \checkmark **ROM or Read Only Memory** is a special type of memory which can only be read and contents of which are not lost even when the computer is switched off. It typically contains manufacturer's instructions. Among other things, ROM also stores an initial program called the 'bootstrap loader' whose function is to start the operation of computer system once the power is turned on.

2. Secondary Memory

Secondarystoragedevicesareoftwotypes:1.magnetic2.Optical Magnetic devices include hard disks and optical storage devices are CDs, DVDs, Pen drive, Zip drive etc.

✓ Hard Disk

Hard disks cons is to frigid material and are usually as tack of metal disc senclosedina tube. The hard disk and hard drive functions as a unit together and is a permanent part of the machine where data and programs are stored. Such disks have a storage capacity of 1 GB to 80 GB and more. Rewritable hard disks. Secondary Memory Examples: -



Compact Disk

Compact Disk (CD) is portable disk having data storage capacity between 650-700 MB. It can hold large amount of information such as music, full-motion videos, and text etc. CDs can be either read only or read write type.



Digital Video Disk

Digital Video Disk(DVD) is similar to a CD but as larger storage capacity and enormous clarity. Depending upon the disk type it can store several Gigabytes of data. DVDs are primarily used to store music or movies and can be played back on your television or the computer too. These are not rewritable.



• Input / Output Devices:

These devices are used to enter information and instructions into a computer for storage or processing and to deliver the processed data to a user. Input/output devices are required for

users to communicate with the computer. In simple terms, input devices bring information INTO the computer and output devices bring information OUT of a computer system. These input/output devices are also known as peripherals since they surround the CPU and memory of a computer system.

• Input Devices:

An input device is any device that provides input to a computer. There are many input devices, but the two most common ones are a keyboard and mouse. Every key you press on the keyboard and every movement or click you make with the mouse sends a specific input signal to the computer.

Example of input device: -

✓ Keyboard:

It is a tool for inputs. The keys are set in matrix in the keyboard, as they have rows and columns. The key board keys are: alphabetic keys, numeric keys, feature keys and control keys. Alphabet keys and numerical keys enable the correct characters to appear on the keyboard. Control keys are used to perform some action and function keys are used to execute some program or user specified operation.



✓ Mouse:

A system which controls cursor or pointer movement on a display screen. A mouse is a tiny object you can move along as moth, hard surface. Its name comes from its shape, which looks a little bit like a mouse. When you push the mouse, the pointer moves in the same direction on the display screen.



✓ Trackball:

A track ball is an input device used in computer sor other electronic devices for entering motion data. It serves the same function as a mouse, but is built on top with a movable ball

that can be rolled in any direction.



✓ Touchpad:

A touch pad is a pointing tool (controlling the location of inputs) on a computer display panel. It provides an alternative to the keyboard. Touch pads are often designed for use with desktop computers and were initially used in laptop computers. A touch pad works by feeling the movement of the user's finger and downward pressure.



✓ Touch Screen:

By simply touching the display screen it helps the user to operate /make selections. A computer screen sensible to a finger or stylus tap. Widespread use on ATM devices, retail point-of-sale terminals, vehicle navigation systems, medical displays and industrial screens.



✓ Light Pen:

Light pen is an input device that utilizes a light-sensitive detector to select objects on a display screen.



✓ Magnetic ink character recognition(MICR):

MICR can identify character printed with a special ink that contains particles of magnetic material. This device particularly finds applications in banking industry.



✓ Optical mark recognition(OMR):

Optical mark recognition, also called mark sense reader is a technology where an OMR device senses the presence or absence of a mark, such as pencil mark. OMR is widely used in tests such as aptitude test.



✓ Bar code reader:

Bar-code readers are photo electrics canners that read the barcodes or vertical zebra strips marks, printed on product on trainers. These devices are generally used in super markets, books hops etc.



✓ Scanner:

It is an input device that can read text or illustration printed on paper and translates the information into a form that the computer can use. A scanner works by digitizing an image.



Page | 23

• Output Devices:

Output system collects information from the CPU and presents the information in the desired form to the user. The processed data, which is stored in the computer's memory, is transmitted to the output device, which then transforms it into a user understandable form. Typically, the output is recorded in one of the two forms-on the display unit, or on paper (hardcopy).

Example of output device: -

✓ Monitor:

Monitor is also used synonymously with "computer screen" or "tv." Monitor is a television screen-like output system that can be used to show information using a Cathode Ray Tube (CRT). The monitor is fitted with a manual character input keyboard, which shows the information a sitiskeyed in. It also shows the output of a program or application. Monitors are also available in various sizes, as is TV.\



✓ Printer:

i. Printers are used to render production of paper (commonly known as hard copy). They can be listed as Impact or Non-Impact Printers depending on the equipment used.

ii. Use the typewriting process in which a hammer hits the paper through a rope to produce the output. This group includes Dot- Matrix and Character printers.

iii. When printing, non-impact printers do not touch the paper. The symbols are engraved on paper using chemical, heat, or electrical signals. Inkjet, Desk Jet, Laser, Thermal Printers fall into this printer group.



✓ Plotter:

Plotters are used on paper for printing graphical output. It interprets computer commands and uses multi-color automatic pens to draw line drawings on paper. This can produce graphs, sketches, tables, maps etc.

Plotter



✓ Facsimile(FAX):

Facsimile machine, a device that can send or receive pictures and text over a telephone line. Fax machines work by digitizing an image.



✓ Sound cards and Speaker(s):

An expansion board which allows the manipulation and production of sounds by a computer. Almost all CD-ROMs require sound cards and have become ubiquitous on modern personal computers. Sound cards allow the machine to output sound through speakers connected to the board, record sound input from a machine-connected microphone and manipulate sound stored on a disk.



Summary

The book of MIS introduction consists of Management information, it so rigination, History of MIS. Role, Importance and Impact of MIS has also been discussed with respect to the organization. MIS can only be understanding with the help of basics of types computer and Hardware of MIS.

Self – Assessment Exercise

How MIS impacts the Organization?

What are the types of Computers and Hardware of MIS discuss?

CHAPTER 2 - CONCEPTUAL FOUNDATIONS OF MIS

OBJECTIVES

After completion of this lesson the student will able to understand:

Introduction to Conceptual Foundations of MIS The Decision-Making Process System Approach to Problem Solving Summary Self-Assessment Exercise

Introduction to Conceptual Foundations of MIS

Information reflects an improvement in awareness. It refers to the general frame work of what people know a out definition sand facts. Information depends on the context and the general awareness of the receiver as to its meaning. Information systems arise as a discipline concerned with the design, creation and use of IT-based arte facts (Weber, 1987). Information systems are highly important to business enterprises growing and thriving in a competitive environment. For the management of essential information and data, all sectors of the industry depend entirely on these. An information system is a software system for recording, distributing, processing, retrieving, manipulating or displaying information, thus helping individuals, organizations or other software systems. Basically, information systems collect organization's data(internal data) and their world(external data). They store objects

from the database for a long period of time. When detailed information is needed the correct data items are modified as necessary and the resulting information is obtained by the user. The information output can take the form of a query response, decision outcome, expert-system advice, transaction document or a report, depending on the type of information system. In order to acquire information, prescribed information systems depend on procedures for the compilation, storage, manipulation and access to data.

Within literature on management, it is clarified that an information system is typically a particular type of program. A device is a collection of components (subsystems), which work together to achieve certain goals. A system's goals are reflected in its outputs. Mainly, the purpose of an information system is to provide the company members with the correct outputs. Many of the entities are part of a broad network. Information systems are used to assist management by providing input on the performance of the company.

Feedback is defined as the output sofa system which are converted back into inputs to control the operation of the system. Information systems are used to equate the current output data with the earlier established standards. Managers will formulate remedial steps based on the knowledge about the inconsistencies, which are then incorporated back into the operations of the company.

- a) Input: In information systems, input is the activity of collecting and capturing raw data.
- b) Processing: Processing of information systems involves turning the data into useful outputs. Processing involves tasks such as estimation, data analysis and alternative behavior, and data storage for future use. In business conditions the transformation of data in to useful information is important. Processing can be performed manually or with the aid of a computer.
- c) Output: Output involves generating valuable information in the information systems, typically in the form of documentation and reports. For example, outputs may include manager reports, and information given to shareholders, banks, government agencies, and other groups. Output from one device can in some cases become input to another.
- d) Feedback: Information systems, feedback, are system information used to make changes to input or processing activities. Feedback is also essential to executives and decision-makers. Manual and Computerized Information Systems:

Manual or computerized information system. Many excellent computerized information systems currently track stock indices and markets and recommend when to buy or sell broad blocks of stocks to take advantage of market fluctuations.

Computer-based information systems: A computer-based information system(CBIS) is a common collection of hard ware, software, databases, telecommunications, people, and procedures designed to collect, manage, store, and turn data in to information.

Most theoretical studies show that various hypotheses are used alone in the field of information systems (Schneberger and Wade, 2006). These range from purely technical ideas, e.g. the Technology Acceptance Model (Wixom & Todd, 2015), to more organizational viewpoints.

Theory of information development (Cook & Brown, 1999), towards more human-centered theories such as Critical Social Theory (Benoit, 2001). A large treatise of these theories can

be found on the website of IS Research's Theories Used (Schneberger & Wade, 2006).

Information systems are used in any sort of career imaginable. Entrepreneurs and operators of small companies use information systems to meet foreign clientele. Sales agents use information systems to promote goods, interact with consumers and evaluate patterns in sales. Managers use the information system to make important decisions, such as constructing a production facility. Financial planners use information systems to counsel their clients on helping them prepare for retirement or education for their children.

Main features of a system are as follows:

- **1.** All systems are made up of component parts and/or subsystems, and can only be described in terms of the whole.
- 2. The components/subsystems of a system work towards a collective goal.
- **3.** The subsystems are arranged in a hierarchy, where moving up the structure provides a wider view and descending the structure provides greater detail.
- **4.** No part of the system can be changed without some effect being felt throughout the whole system.

A System Approach offers a basis for analyzing the various processes around us. This is an approach that emphasizes the interactions between the various parts of the system, and is primarily about relationships and processes.

The Decision-Making Process:

MIS is a system which provides accurate and timely information to the management. Such information is required to promote the decision- making process and to allow organizations to efficiently carry out their planning, control and operational functions. MIS improves the company's productivity by cutting costs and increasing processing speed. The influence of technology has changed the information position in a business enterprise. Now information has been known as the organization's lifeblood and the modern company is dead, with no details. MIS and the organization's subsystems lead in multiple respects to the decision-making process. Power said decision-making is an integral aspect of business environment function. Companies also make decisions about organizational changes or choose new market opportunities to maximize the benefit of the company. Companies create decision-making mechanism focused on individuals responsible for decision-making and the scope of business activities within the organization. Management information system is a valuable

method for making company decisions. Historically, MIS has been a manual method used to collect information and channel it to the decision- makers. MIS is an organization-a fantastic attempt to provide information about the decision-making process. The program is a system a tic executive commitment to make the machine accessible to all managers. On the other sector, which is DSS, the virtual office and knowledge-based systems, the MIS sets the stage for achievements. The key concept behind MIS is to ensure a continuo us flow of knowledge to the management. Thereafter, decisions are designed by data and knowledge obtained from MIS. According to Obi (2003), MIS is useful in decision-making, as it can detect disruptions in a system by itself, assess a course of action and take action to get the system under control. This is also important in non-programmer decisions, a sit offers support by providing information for the decision-making phase of search, review, assessment and choice and implementation. Adebayo (2007) stressed the need for MIS in decision-making, as it offers knowledge essential for better decision-making on human and material resources issues that affect the organization. MIS can be used as a method of data processing, and is used as information indecision-making processes.



Figure: 3

Received from: Ranisavljević, P., Spasić, T., & Mladenović- Ranisavljević, I. (2012). Management information system and decision-making process in enterprise. Economics, Management, Information and Technology EMIT, 1, 184-194

Type of	Examples of	Characteristics	How Decisions are
decision	Problem areas		Made
Structured	Order validation,	Availability of an	Fully Computerized
	Inventory	algorithm (standard	(transaction processing
	Reorder	operating procedure)	systems)
Semi structured	Sales forecasting, Budgeting, Risk Analysis	Programmable aspects present	Human decision maker supported by computer
Unstructured	Promotion of Personnel, Introducing new technology	No Standard procedures of aspects available	Principally by a humar with some computer support

Fig.: Types of Decision System Approach to Problem Solving

The system analysts and programmers who designed and developed the MIS were not familiar with the management structure and the position of managers with in the organization in the initial stages. So, they weren't in a position to understand how the organizations administrators handled problems. They implemented the method approach to problem solving, in order to establish a consistent and organized framework for problem solving. Whatever type of problem, any manager can use the program approach. It provides an underlying logic to a universal approach to solve any form of problem through a sequence of steps.

- a) Define the problem
- **b**) Identify alternative solutions
- c) Evaluate alternative solutions
- d) Select the best alternative
- e) Implement the solution
- f) Follow up

Herbert Simon proposed another common model which includes four steps: intellect, design, choice and review. Intelligence is the first step in this process, which applies to finding which describing problems. Projectconsistsofdesigningandevaluatingthealternatives.Preference is the method of choosing and implementing the best option, while analysis is the follow-up phase after the solution is implemented. Now let us under stand every of the steps involved in approaching the systems.



a) Define the Problem

In this approach the first step is to identify the problem. A issue is considered to be a constraint or barrier to the otherwise smooth flow of activities. It can be defined by the symptoms thereof. A symptom is an example of an problem and shouldn't be the cause. To recognize these possible signs, device analysts are needed to. A fall in revenue, for example, is an indication of a problem. As and when such an indication occurs, the management must investigate the potential triggers for the fall and determine the real problem(s). When a problem is established, it must be described in simpler terms so that there is no con fusion in the communication of the problem through the hierarchy.

b) Identify Alternative Solutions

There's more than one way to solve a problem. But it's not advisable to just think about and try to incorporate a single solution. Such a decision does not encourage the manager to think about other potential alternative solutions and the associated advantages. Hence it is recommended that several alternatives be created for the problem and chosen as the best alternative. Those alternatives are defined and established in this phase. The approaches that have worked in the past are a valuable guide to find new alternatives from. Advice from (internal) colleagues and (external) consultants will provide fresh insight sin to the issue. Many companies employ expert programs to help them produce alternatives. Expert programs use specific expert expertise to create approaches to problems in the same way that an expert does.

c) Evaluate Alternative Solutions

Once the alternative solutions have been created, they must be tested to choose the best solution. Essentially, assessment is performed to see how well an option suits as the best solution to the problem. Growing alternative is evaluated by means of various analyzes such as cost- benefit analysis etc. Different parameters are assessed for each option in order to understand its effect in finding a solution to the problem.

d) Select the best alternative

Once the alternative solutions have been created, they must be tested to choose the best solution. Essentially, assessment is performed to see how well an option suits as the best solution to the problem. Growing alternative is evaluated by means of various analyzes such as cost- benefit analysis etc. Different parameters are assessed for each option in order to understand its effect in finding a solution to the problem.

e) Implement the Solution

To solve the problem the chosen solution needs to be implemented. Often for implementation the solution has to be freshly built. For example, if installation of new and custom-made equipment is considered to be the solution chosen, then the equipment must be planned and then installed accordingly. This also holds true for the information systems. Changes in MIS must be planned and updated to suit the needs of the company.

f) Follow-up

It is the last step in this strategy. If put in to practice in the real world the best solution will fail to deliver the expected results. Hence, it is always recommended to track and evaluate the results provided by the solution. This is called continuity. Follow-up ensures that device output post- implementation is adequate.

Summary

The second chapter discussed about conceptual foundations of MIS. It has discussed the decision-Making process, the system approach to problem solving.

Self – Assessment Question

What is the Decision-making process discuss with diagram? What is system approach to the problem solving?

Chapter 3 - Types of MIS

OBJECTIVE

After completion of this lesson the student will be able to understand:

Introduction to the Kinds of Information System

Types of Management Information System

Specification of Information Systems\

Summary

Self- Assessment Exercise

Introduction to the Kinds of Information Systems

Feedback mechanism – The component that helps organizations achieve their goals, such as increasing profits or improving customer service



Input, Processing, Output, Feedback

a. Input – Gathering and capturing raw data

- b. Processing Converting or transforming data into useful outputs
- c. Output Production of useful information, usually in the form of documents and reports
- d. Feedback Output that is used to make changes to input or processing activities

Several types of Information Systems:

The information system may be categorized according to the use of the information in any given organization. Therefore, an information system may be split into operations support system and management support system within an organization.

A) Operations Support System

End-user data input processed to produce information items, i.e. reports used by internal and/or external users, is conducted in an enterprise. Such a program is called program service support.
The operational support system aims at facilitating business transaction, monitoring output, promoting internal and external communication and updating the organization central database. The operation support system is further divided into a transaction- processing system, processing control system and enterprise collaboration system.

b) Transaction Processing System (TPS)

There are many forms of transactions across department in the manufacturing Organization. Typical organizational divisions are Sales, Account, Accounting, Factory, Engineering, Marketing and Human Resource. Purchase order, transactions return, cash receipts, credit purchase; payment slips, stock accounting, inventory management, depreciation accounting, etc. can be classified as batch processing, single transaction processing, and real-time transaction processing.

c) Process Control System

A computer system makes all decisions in a production organization, without any human involvement. Critical information in this type of system is fed to the system on a real-time basis thus allowing process control. These systems are called process management systems.

d) Enterprise Collaboration System

Recently, greater stress is placed on team activity or coordination through multiple functional teams. A framework that allows for collaborative effort by enhancing data communication and sharing is referred to as a collaborative enterprise program.

e) Management Support System

Managers need detailed details for making an organizational decision in a particular format. A device that enables an effective managerial decision-making process is called a management support system.

Management support systems are generally classified as an information management system, a decision support system, an expert system and an information accounting system.

Management information system provides manager with information that enables daily decision-making. Decision support program offers manager information enabling solution relevant to unique issues.

f) Decision Support System (DSS)

The Decision Support System (DSS) represents organization's management. A decision support program has specialized tools for data analysis, enabling and assisting all facets of problem-specific decision taking. DSS can use data from external sources to enhance

decision making, such as current stock prices. DSS is used when the problem is complicated, so it is difficult to acquire and use the knowledge required to make the right decision. DSS is established in an Organization, with the guidance of decision-makers. DSS helps in the correct decision taking process and makes no decision whatsoever.

g) Executive Information System(EIS):

Executive Support System is also known as an Executive Information System (EIS). An organization's Senior Managers use the EIS. It must also be easy to use, so that executives can use it without support. EIS can conduct pattern analysis, reporting exceptions and possess drill- down capabilities. Typically, the findings are delivered in a graphic form, customized to the knowledge needs of the executive. EIS has online analytical resources and accesses a broad variety of internal and external info.

h) Workflow System

A workflow system is a rule-based management system which guides, schedules, and monitors the execution of a collection of interrelated tasks organized to form a business process. There are three kinds of tools to workflow. They are as follows:

- i. Administrative workflow systems focus on the tracking of expense reports, travel requests, messages.
- ii. An Ad-hoc workflow system deals with the shaping of product, sales proposals and strategic plans.
- iii. An Internet-based workflow program can be paired with an e-mail. A workflow framework may be based on server architecture and may be using a database or fileserver.

i) Expert Systems:

The **expert systems** have the ability to make suggestions and act like an expert in a particular field of an organization. An expert system has an extensive knowledge base.

j) Strategic Information Systems:

Competitive information systems apply IT to the goods, services, or business processes of a company to help it achieve a strategic advantage over its rivals. Strategic information systems are an important special type of organizational information system used to gain or sustain marketplace competitive advantage.

Types of Management Information system:

Information management systems use information technology to collect and distribute all the information that a business or organization uses to work.—department or function of an organization generate sits own operational and financial data, and therefore has its own information system to keep track of it. There are as many types of information management systems as there are divisions or roles within an organization, but there are a few unique systems that virtually every corporation or agency requires to run efficiently for the entire entity.

a) Management Reporting System:

A management reporting system is a database for reporting on the finances and activities of all management levels of an organization. Middle managers typically use a company's management reporting system to produce daily reports comparing current and past financial results to assess financial progress and monitor how the middle managers themselves perform. Upper management uses the data produced by the reporting system to compare the present financial status of the organization and its operating performance with its defined organization objectives.

b) Process Control:

A process control device controls the physical or industrial processes of a company such as metal manufacturing, petroleum refining, or vehicle assembly. Data is continuously collected by the control system and is designed to produce daily reports on system performance. A manager looks at the process management reports to see how frequently a specific occurrence happens during the production cycle for a given period of time, or how often the business has deviated from a standardized manufacturing process during that period. This information is crucial to monitoring overall manufacturing performance and machinery and employee health.

c) Sales and Marketing:

A sales and marketing system supports management in executing and tracking the effectiveness of the organization's sales and marketing functions. These include:

- ➤ Developing products
- \succ Forecasting sales
- ➤ compiling and tracking the advertising outlets and schedules
- ➤ managing distribution channels

- ➤ pricing, discounts and promotions
- ➤ implementing effective advertising and sales promotions

Reports also tell managers which items are selling and which aren't and how well each individual product in the company's inventory is selling at each retail location.

d) Inventory Control

The inventory tracking system monitors anything related to inventory, including on-the-spot sales, spoilage, theft, and inventory, enabling management to decide when specific products get low and need to be replaced, either in the company's warehouse or at any of its specific retail sites. It monitors product movement through the ware house, from warehouse to storage, to store sales and returns.

e) Accounting and Finance

An accounting and finance program records the assets and investments of an entity and compiles all the data needed by law for financial reporting for such functions as payroll, federal, state, and local taxes and pension funds. This program provides all the reports needed for periodic financial audits and annual reports where they are generated by the company or institution. The accounting and finance system also allow the regular reporting of routine transactions such as income from purchases, returns, bank deposits and transfers. All monthly financial statements are produced from this program, such as the balance sheet and the profit and loss statements. Statement of profit and loss, is created from this method. Such statements are important to monitor current financial results against past performance and against expected potential growth targets for middle and upper managers.

f) Human Resources

A human resource information management program facilitates the day to day management and employee monitoring and recruitment. These systems track some financial human resources components that overlap the accounting and finance system, such as payroll, compensation and retirement, but the human resource system is far more than that. Through offering an online portal for HR policies, legal enforcement notices and compulsory training activities, it will streamline contact between employees and HR. This can automate workplace time keeping, monitor job attendance, quantify available and used leave and let workers apply for holiday or sick leave, all without the physical intervention of a boss.

g) Office Automation/Enterprise Collaboration

Information management system, an office automation, or business collaboration, enables

managers to monitor knowledge flow across the organization. Any electronic communication tool or mechanism used by managers in the company to communicate with other managers, with their employees or for employees to communicate with each other falls under the umbrella of the information system for the office automation. Such devices and services can include landline phones, mobile phones, internet, intranet, multimedia, email and voice mail, file sharing, and videoconferencing.

Manufacturing and Production Information Systems Production and Production Information Systems The role of manufacturing and production is responsible for the actual output of the products and services of the company. Manufacturing and manufacturing processes deal with the preparation, construction and maintenance of manufacturing facilities; setting production goals; procurement, storage and availability of manufacturing materials; and scheduling of the machinery, services, materials, and labor needed to fashion finished goods. These activities are supported by the manufacturing and production information systems. Production and Production Information Systems The role of manufacturing and production is responsible for the actual output of the products and services of the company. Manufacturing and manufacturing facilities; setting production goals; procurement, storage and availability of manufacturing materials; and scheduling of the machinery, services, materials, and labor needed to fashion finished goods. These activities are supported by the actual output of the products and services of the company. Manufacturing and manufacturing facilities; setting production goals; procurement, storage and availability of manufacturing materials; and scheduling of the machinery, services, materials, and labor needed to fashion finished goods. These activities are supported by the manufacturing materials; and scheduling of

Specification of Information Systems:

Specification of any device is crucial prior to its creation. Requirements perform the same purpose for information systems that blue-prints and technical specifications do for physical structures. Specifications act as benchmarks for both testing projects and implementing them. We also promote quality control through verification (are we building the right system, i.e. do the design and implementation follow the specifications?) and validation (are we building the right system, i.e. does the system fulfill user needs?).

Formal vs. Informal Specifications

Informal requirements by graphical modeling have been used in the production of business information systems at least since the late 70s. Many of these modeling methods we will be using. Formal specification languages (e.g., Larch, VDM, Z, FOOPS, and OBJ)have been created recently. While their use in the development of business systems is in its very early stages, they are expected to play as significant role in the future. These formal specification

techniques attempt to a thematically define the information systems structure, purpose, and behavior.

Components of specifications

Specification of an information system is given by their:

- ✓ Structure: How it is organized.
- ✓ Function: What it does.
- ✓ Behavior: How it responds to events and stimuli.
- ✓ Data: Its meaning and organization

Summary

The third chapter of this book discussed about the kinds of information system, Types of MIS and specification of information System.

Self – Assessment Questions

What are the types of MIS? what is the specification of Information system?

CHAPTER 4 PLANNING AND CONTROL

4.0. **OBJECTIVE**

After completion of this lesson the student will be able to understand: Introduction to Planning and Control Differences between planning and Control Information System Analysis System Design Summary Self – Assessment Exercise

Introduction to Planning and Control

Planning : An MIS is a computerized database of structured and configured financial, administrative and programmatic information in such a way that it generates daily operations reports for every level of management in an organization. The main aim of the MIS is o provide managers with input on their own performance; top management is able to track the entire organization. Usually, the information presented by the MIS indicates "real" data over against "anticipated" results and results a year before; therefore, it calculates progress against objectives. Below is a list of the steps to be taken when planning on implementing a MIS. Management Information Systems (MIS) literature focuses primarily on the essence and function of MIS's and on processes for the design and implementation of these systems. Typically, the idea of "MIS planning" is viewed either as one of establishing the need and the general design framework for such a program, or as part of project planning for the MIS growth effort. Strategic preparation for the organization's basic objectives and goals.

Indeed, one of the possible explanations[6] for the failure of many MIS's i~-that they were built from the same "bottom-up" perspective that characterized the production of earlier-era data processing systems. Such design strategies mainly reflect the pursuit of performance, such as cost savings, rather than the pursuit of greater organizational efficiency.1 The current perception of a MIS as an organizational decision support system is incompatible with the design / development strategies adapted to data processing. Operating performance of the enterprise is just one aspect of management decision-making. Achieving greater operational efficiency is the overarching factor in most of the strategic decisions to be endorsed by the MIS; it must also be of utmost importance in the nature of the MIS. There is an inherent connection between the decisions supporting MIS and the intent, objectives and strategy of the organization. Although It seems to be simple, as part of MIS architecture methods it has not been operationalized. There are others who suggest that the MIS manager can't expect to get interested in issues like organizational tasks, objectives and plans because they're completely outside his authority sphere. This article outlines an operationally feasible method for the identification and use of the elements of the "strategy package" of the company to prepare for the MIS. Whether or not written statements of such strategic elements—e.g., objectives, targets, etc.

—exist, it will still of ten be important to carry out the identification process of the study, as these written statements are either obsolete, or may be of the type typically created for purposes of public relations rather than strategic management. If there are reliable statements of organizational intent and strategy, then that portion of the phase that deals with translating organizational plan into strategic criteria of MIS needs to be put into action.

Controlling:

Controlling involves ensuring that performance does not deviate from standards. Controlling consists of three phases, including:

- a) setting performance standards;
- b) measuring actual results to standards; and
- c) taking corrective measures where appropriate.

Quality expectations are often expressed in monetary terms such as sales, costs, or income but can also be expressed in other terms such as units produced, amount of faulty goods, or quality or customer service rates.

Depending on the performance criteria, performance evaluation can be achieved in many forms, including financial statements, revenue reports, output statistics, customer satisfaction, and structured performance evaluations. Managers at all levels perform to some degree the management role of managing.

Controlling managerial role in the behavioral or coercive sense should not be confused with power. This role does not mean managers should seek to control or exploit their personalities, beliefs, attitudes or emotions Underlines. Rather, this management task concerns the role of

Page | 42

the manager in taking the required steps to ensure that sub ordinates' work-related activities are compatible with, and contribute to, the achievement of organizational and departmental goals.

Effective control allows plans to exist, because planning provides the performance expectations or targets that are required. Controlling often needs a good understanding of where liability for standard deviations resides. Budget audits and performance audits are two typical management methods. An audit includes checking and verifying the records and relevant documentation. A budget audit offers details about where the company is about what has been planned or budgeted for, where as a performance audit may seek to decide if the recorded figures are presentation of actual results. While controlling is often thought of in terms of financial considerations, managers do need to monitor production and operations processes, service delivery procedures, company policy enforcement, and many other activities within the organization.

The management functions of preparing, arranging, guiding, and controlling are commonly known as the best way to characterize the job of the manager, as well as the best way to identify acquired information about the management report. While the world faced by managers and the tools managers used to execute their duties has undergone significant changes, managers still execute these important functions.

Differences between planning and control information

Planning and managing are two distinct management roles, but they are closely related. The scale of the operations, if both overlap. Without the planning basis, monitoring activities becomes pointless and planning becomes a futile exercise without control. No function can be served by that in the absence of power. But preparing and monitoring support one another. According to Billy Goetz, "In the following paragraphs, the relationship between the two can be summarized

- 1. Planning precedes controlling and controlling succeeds planning.
- 2. Planning and controlling are inseparable functions of management.
- **3.** Activities are put on rails by planning and they are kept a tright place through controlling

4. The process of planning and controlling works on Systems Approach which is as follows:

Planning — Results CorrectiveAction

- 5. Planning and controlling are integral parts of an organization as both are important for smooth running of an enterprise.
- 6. Planning and controlling reinforce each other. Each drives the other function of management

The close relationship between the two is very crucial and essential in the present complex world that affects the Organisation. In today's world, preparation is very likely to fail due to any unexpected events. To the rescue comes managing there. It gives us incentive to make better plans until the control is effectively completed. Therefore, planning and controlling are intemperate functions of a business enterprise.

Basis	Planning	Controlling
Meaning	It is the first step on deciding what to do, how, where and when a specific work has to be done	Controlling is the main goal and responsibilities of all management in any enterprises.
Function	Planning is about looking ahead	Controlling is looking back
Process	It is the first process in building a business	It is the last structure any business
Features	Planning, arranging, employee, direction	Controls all the planning features

Fig.

Systems development is systematic process which includes phases such as planning, analysis, design, deployment, and maintenance. Here, in this tutorial, we will primarily focus on –

- A. Systems analysis
- **B.** Systems design

Systems Analysis

This is a method of collecting and analyzing information, finding problems and breaking down a structure into its components.

Analysis of the system is carried out to analyze a system or its components to establish its objectives. It's a problem-solving strategy that strengthens the system and ensures that all system components work efficiently to achieve their function. Analysis determines what should be performed on the device.

4.3. Systems Design

It is a method of designing a new business system or replacing an existing one by specifying its components or modules to meet the particular requirements. You need to understand the old system fully before preparing, and decide how computers can best be used to work efficiently. System Architecture focuses on how the purpose of the device is to be accomplished.

System Analysis and Design (SAD) mainly focuses on -

- i. Systems
- ii. Processes
- iii. Technology

i. System:

The word System is derived from the Greek word System, meaning an coordinated relationship between any group of components to attain a common cause or aim.

A system is "an orderly grouping of interdependent components linked together according to a plan to achieve a specific goal."

➤ Constraints of a System

A system must have three basic constraints -

✓ A system must have some structure and behavior which is designed to achieve a pre defined objective.

✓ **Interconnectivity** and **interdependence** must exist among the system components.

✓ The objectives of the organization have a higher priority than the objectives of its sub systems.

For example, traffic management system, payroll system, automatic library system, human resources information system

> Properties of a System

A system has the following properties

✓ Organization:

Structure and order mean organization. It is component arrangement which helps to achieve pre determined goals.

✓ Interaction:

It's defined by the way the components interact with each other.

For example, purchasing department in an company has to communicate with production department and payroll with personnel department.

✓ Interdependence:

Interdependence means the way a system's components rely on each other. The components are organized and connected to one another according to a defined plan for proper functioning. One sub system's output is what other subsystem needs as input.

✓ Integration

Integration involves how elements of a device are linked to one another. This ensures that the system parts operate together within the system while each component performs a specific task.

> Central Objective

Unit goal has to be key. It could be accurate or it could be claimed. It is not unusual for an entity to state an aim and work to attain another. Early on in the study, users need to know the key purpose of a computer program for a good design and conversion.

> Elements of aSystem

CONTROL INPUT PROCESSOR OUTPUT PROCESSOR OUTPUT BOUNDARIES AND INTERFACES

The following diagram shows the elements of a system -'

I. Outputs and Inputs

- > The main aim of a system is to produce an output which is useful for its user.
- > Inputs are the information that enters into the system for processing.
- > Output is the outcome of processing.

II. **Processor(s)**

- The processor is the element of a system that involves the actual transformation of input into output.
- It is the operational component of a system. Processors may modify the input either totally or partially, depending on the output specification.
- As the output specifications change, so does the processing. In some cases, input is also modified to enable the processor for handling the transformation.

III. Control

> The control element guides the system.

- It is the decision-making subsystem that controls the pattern of activities governing input, processing, and output.
- The behavior of a computer System is controlled by the Operating System and software. In order to keep system in balance, what and how much input is needed is determined by Output Specifications.

✓ Feedback

- > Feedback provides the control in a dynamic system.
- > Positive feedback is routine in nature that encourages the performance of the system.
- Negative feedback is informational in nature that provides the controller with information for action.

✓ Environment

- > The environment is the "super system" within which an organization operates.
- > It is the source of external elements that strike on the system.
- It determines how a system must function. For example, vendors and competitors of organization's environment, may provide constraints that affect the actual performance of the business.

✓ Boundaries and Interface

- A system should be defined by its boundaries. Boundaries are the limits that identify its components, processes, and inter relationship when it interfaces with another system.
- > Each system has boundaries that determine its sphere of influence and control.
- > The knowledge of the boundaries of a given system is crucial in determining the nature of its interface with other systems for successful design.

✓ Types of Systems

The systems can be divided into the following types -

a) Physical or Abstract Systems

> Physical systems are tangible entities. We can touch and feel them.

- By fact, every physical structure can be static or dynamic. For starters, desks and chairs are the static physical sections of the computer center. A programmed machine is a dynamic system where programs, data, and applications can change as needed by the user.
- Abstract systems are non-physical entities or conceptual that may be formulas, representation or model of a real system

b) Open or Closed Systems

- An open system must interact with its environment. It receives inputs from and delivers outputs to the outside of the system. For example, an information system which must adapt to the changing environmental conditions.
- ➤ A closed system does not interact with its environment. It is isolated from environmental influences. A completely closed system is rare in reality.

c) Adaptive and Non-Adaptive System:

- Adaptive System responds to the change in the environment in a way to improve their performance and to survive. For example, human beings, animals.
- Non Adaptive System is the system which does not respond to the environment. For example, machines.

d) Permanent or Temporary System

- > Permanent System persists for long time. For example, business policies.
- Temporary System is made for specified time and after that they are demolished. For example, A DJ system is set up for a program and it is dissembled after the program.

e) Natural and Manufactured System

- > Natural systems are created by the nature. For example, Solar system, seasonal system.
- > Manufactured System is the man-made system. For example, Rockets, dams, trains.

f) Deterministic or Probabilistic System

Deterministic system functions predictably and the interaction of system components is understood with certainty. For example, water is created by two hydrogen molecules, and one oxygenmolecule. Probabilistic System shows uncertain behavior. The exact output is not known. For example, Weather forecasting, mail delivery.

g) Social, Human-Machine, Machine System

- Social System is made up of people. For example, social clubs, societies.
- In Human-Machine System, both human and machines are involved to perform a particular task. For example, Computer programming.
- Machine System is where human interference is neglected. All the tasks are performed by the machine.

h) Man–Made Information Systems

- It is an interconnected set of information resources to manage data for particular organization, under Direct Management Control (DMC).
- This system includes hardware, software, communication, data, and application for producing information according to the need of an organization.

Man-made information systems are divided into three types -

- Formal Information System It is based on the flow of information in the form of memos, instructions, etc., from top level to lower levels of management.
- Informal Information System This is employee-based system which solves the day to day work related problems.
- **Computer Based System** This system is directly dependent on the computer for managing business applications. For example, automatic library system, railway reservation system, banking system, etc. Systems Models

a) Schematic Models

- \checkmark A schematic model is a 2-D chart that shows system elements and their linkages.
- ✓ Different arrows are used to show information flow, material flow, and information feedback.

b) Flow System Models

✓ A model of the flow system reveals the ordered movement of material, energy and information that holds the system together.

- ✓ For example, the Software Evaluation and Analysis Technique (PERT) is used to abstract a model-shaped real-world system.
- c) Static System Models : They represent one pair of relationships such as *activity-time* or *cost-quantity*.
- ✓ The Gantt chart, for example, gives a static picture of an activity- time relationship.

d) Dynamic System Models

- ✓ Business organizations are dynamic systems. A dynamic model approximates the type of organization or application that analysts deal with.
- \checkmark It shows an ongoing, constantly changing status of the system. It consists of-
- Inputs that enter the system
- The processor through which transformation takes place
- The program(s) required for processing
- The output(s) that result from processing

e) Categories of Information

There are three categories of information related to managerial levels and the decision managers make.



f) StrategicInformation

- ✓ This information will be needed for the next few years by top management for longrange planning policies. Income patterns, financial efficiency, human capital and population development, for example
- \checkmark This type of information is achieved with the aid of Decision Support System (DSS)

g) Managerial Information

- ✓ This type of Information is required by middle management for short and intermediate range planning which is in terms of months. For example, sales analysis, cash flow projection, and annual financial statements.
- \checkmark It is achieved with the aid of Management Information Systems (MIS).

f) Operational information

- ✓ This information will be needed for the next few years by top management for longrange planning policies. For example, Income patterns, financial efficiency, human capital and population development.
- \checkmark It is achieved with the aid of Data Processing Systems(DPS).

4.4 Summary

Chapter four of MIS discussed about the planning and control of the information. The planning include show information should be move from one place to other and controlling includes what type of information should move. This also includes the system analysis and system design.

4.5. Self- Assessment Exercise

What do you Understand by Planning and Controlling in terms of MIS?

Discuss the System analysis and System Design briefly?

Chapter 5

MIS Development Process (MISDP)

5.0 **OBJECTIVES**

After completion of this lesson the student will be able to understand:

Introduction to MIS Planning and Development

Planning for MIS

MIS Development Process(MISDP)

Summary

Self- Assessment Exercise

Introduction to MIS Planning and Development

You will be debating the cycle of MIS creation in this study session. You'll begin the session by explaining why creation of MIS is needed. You will begin the topic with a summary of how to prepare a MIS. You'll then determine the specifications of the information system. In which you will explore the study and design of the information system, information system development, system test preparation, and implementation. You will conclude the session by explaining how the system works and highlighting factors which contribute to the failure or success of a system.

The Need for MIS Development Process (MISDP) and Its Challenges:

In going through the development for management information system, we should bear the following in mind:

- a) The management information system needs good planning.
- **b)** This system should deal with the management information not with data processing alone.
- c) It should provide support for the management planning, decision making and action.
- d) It should provide support to the changing needs of business management.

Major challenges in MIS implementation are:

a) Quantity, content and context of information - how much information and exactly

what should it describe.

- b) Nature of analysis and presentation comprehensibility of information.
- c) Availability of information frequency, contemporariness, on demand or routine, periodic or occasional, one-time info or repetitive in nature and soon
- d) Accuracy of information.
- e) Reliability of information.
- f) Security and Authentication of the system.

Planning for MIS

MIS design and development process has to address the following issues successfully:

- a) The development of a single MIS covering the entire enterprise will lead to a more efficient, quicker and more streamlined framework, but the complexity of design will increase.
- b) The MIS must deal with the complex environment which includes all other subsystems within the organization's overall information system. Therefore, recognizing and defining the criteria of MIS in the company context is extremely important
- c) It will keep up with environmental shifts, increasing consumer demands and growing competition.
- d) It will make best use of rapidly improving IT capabilities. Cost and time of installing such advanced IT-based systems is high, so there should not be a need for frequent and major modifications.
- e) The cost and time of installing these advanced IT-based systems are high, so regular and significant modifications should not be required
- f) It should take care not only of the consumers, i.e. the managers but also of others take holders such as staff, customer sand suppliers. Once the organizational planning stage is over, the designer of the system should take the following strategic decisions for the achievement of MIS goals and objectives:
- **a.** Development Strategy: Example an online, real-time batch.
- b. System Development Strategy: Designer prefers a system creation approach, such as

practical operational verses, accounting verse analysis.

- **c.** Production Tools: The designer has to select tools. Tools can be external, personalized or packet usage verses in-house.
- **d.** Manpower Composition: The staffs should have analysts, and programmers. Information system planning essentially involves:
- e. Identification of the stage of information system in the organization.
- **f.** Identification of the application of organizational IS.
- g. Evolution of each of this application based on the established evolution criteria.
- h. Establishing a priority ranking for these applications.
- i. Determining the optimum architecture of IS for serving the top priority applications.



Source: Tutorials Point (I) Pvt. Ltd., 2014

MIS Development Process(MISDP):

Information System Requirements



wing diagram illustrates a brief sketch of the process of information requirement analysis -

The following three methodologies can be adopted to determine the requirements in developing a management information system for any organization-

- **Business Systems Planning (BSP)** this methodology is developed by IBM.
- It identifies the IS priorities of the organization and focuses on the was data is maintained in the system.
- ✓ It uses data architecture supporting multiple applications.
- It defines data classes using different matrices to establish relationships among the organization, its processes and data requirements.
- Critical Success Factor (CSF) this methodology is developed by John Rock art of MIT.
- ✓ It identifies the key business goals and strategies of each manager as well as that of the business.
- ✓ Next, it looks for the critical success factors underlying these goals.
- Measure of CSF effectiveness becomes an input for defining this information system requirements.
- End/Means (E/M) analysis this methodology is developed by Wether be and Davis at the University of Minnesota.
- ✓ It determines the effectiveness criteria for outputs and efficiency criteria for the processes generating the outputs.
- ✓ At first it identifies the outputs or services provided by the business processes.
- \checkmark The nit describes the factors that make these outputs effective for the user.
- ✓ Finally, it selects the information needed to evaluate the effectiveness of outputs

Information System Analysis and Design

System analysis and design follows the typical System/Software Design Life Cycle (SDLC) as discussed in the previous chapter. It generally passes through the following phases –

✓ Problem Definition

- ✓ Feasibility Study
- ✓ Systems Analysis
- ✓ System Design
- ✓ Detailed System Design
- ✓ Implementation
- ✓ Maintenance

In the analysis phase, the following techniques are commonly used -

- ✓ Data flow diagrams(DFD)
- ✓ Logic Modeling
- ✓ Data Modeling
- ✓ Rapid Application Development(RAD)
- ✓ Object Oriented Analysis (OOA)

Technology for Information Systems

The technology requirement for an information system can be categorized as -

- ✓ Devices
- ✓ Data center systems It is the environment that provides processing, storage, networking, management and the distribution of data within an enterprise.
- ✓ Enterprise software These are software system like ERP, SCM, Human Resource Management, etc. that fulfill the needs and objectives of the organization.
- ✓ IT services It refers to the implementation and management of quality IT services by IT service providers through people, process and information technology. It often includes various process improvement frameworks and methodologies like six sigma, TQM, and soon.
- ✓ Telecom services

System Test Planning and Execution

The system should be fully tested for errors before being fully operational.

The test plan should include for each test -

- ✓ Purpose
- ✓ Definition
- ✓ test inputs
- ✓ detailed specification of test procedure
- ✓ details of expected output

Each sub-system and all of its components should be checked using specific test procedures and data to ensure each component works as expected.

To detect errors and gain feedback, the testing must include the program users.

System Operation

- Before the system is in operation, the following issues should be taken care of-
- ✓ Data security, backup and recovery;
- ✓ Systems control;
- ✓ Testing of the system to ensure that it works bug-free in all expected business situations;
- ✓ The hardware and software used should be able to deliver the expected processing;
- ✓ The system capacity and expected response time should be maintained;
- The system should be well documented including;
- ✓ A user guide for inexperienced users.
- ✓ A user reference or operations manual for advanced users,
- ✓ A system reference manual describing system structures and architecture.

If the system is fully operational, any problems or difficulties encountered in service could be fixed during its working life and slight changes may be made to address these circumstances.

➤ Factors for Success and Failure

MIS development projects are high-risk, high-return projects. Following could be stated as critical factors for success and failure in MIS development-

- ✓ It should cater to a specific, well-perceived business.
- \checkmark The top management should be completely convinced, able and willing to such a system.

Ideally there should be a patron or a sponsor for the system in the top management.

- ✓ All users including managers and other employees should be made an integral part of the development, implementation, and use of the system.
- There should be an operational prototype of the system released as soon as possible, to create interest among the users.
- ✓ There should be good support staff with necessary technical, business, and inter personal skills.
- ✓ The system should be simple, easy to understand without adding much complexity. It is a best practice, not to add upanentity unless there is both a use and user for it.
- \checkmark It should be easy to use and navigate with high response time.
- ✓ The implementation process should follow a definite goal and time.
- ✓ Proper training should be given to all users, including the top management, so that they have clear knowledge of the system's content and purpose and can use it completely for various managerial activities such as reporting, budgeting, managing, preparing, monitoring etc.
- \checkmark It must produce useful outputs to be used by all managers.
- The system should be well integrated into the management processes of planning, decisionmaking, and monitoring.

5.4. Summary

The MIS development process (MISDP) is the fifth chapter. The introduction has been discussed with basic introduction of MIS planning and development. The planning of MIS is discussed in second part of the chapter five with the discussion on process of MISDP.

5.6. Self-Assessment Questions

What do you understand by MIS planning and development?

what is the process of MIS development process?

CHAPTER 6 - MIS AND BPR

6.0 **OBJECTIVES**

After completion of this lesson the student will be able to understand:

Introduction to business Process Reengineering

Business Process Reengineering Steps

BPR- Current Focus

Summary

Self-Assessment Exercise

6.1. Introduction to Business Process Reengineering

What is BPR?

In general, the BPR focus includes exploring how business processes actually work, how these processes can be revamped to reduce the duplication or unnecessary effort and increase performance, and how process improvements can be introduced to achieve productivity. The aim of BPR, according to Sherwood- Smith (1994), is "seeking to devise new ways of organizing tasks, organizing people and redesigning IT systems so that the processes support the Organisation to realize its goals".

The Definition of BPR:

Some scholars for example, van Meel et al., 1994; MacIntosh and Francis, 1997; Peltu et al., 1996) contend that there's no generally accepted definition of BPR. Peltu et al. find that this lack of an agreed description of BPR makes it difficult to determine the concept's overall success or failure. Until we suggest some structure and techniques for BPR, it is therefore important to make clear what the concept of BPR is. Hammer and Champy's book Reengineering the Corporation: A Blueprint for Business Transformation (1993) is frequently cited among most BPR researchers and is considered one of BPR's starting points.

The following is their definition of BPR:

[Reengineering is] the fundamental rethinking and radicalre design of business processes to achieve dramatic improvements in critical, contemporary measures of performance, such as *cost, quality, service and speed. (p.32)*

Another BPR father, Davenport (1993), describes 'business process redesign' as: ... the analysis and design of workflows and processes within and between organizations. Business activities should be viewed as more than a collection of individual or even functional tasks; they should be broken down into processes that can be designed for maximum effectiveness, in both manufacturing and service environment.

These concepts indicate that we should concentrate on processes rather than functions (or structures) as the concentrate of business operation (re-) design and management. Different researchers often describe the word 'method' in a slightly different way. Hammer and Champy (1993) for example describe a method as: *a collection of activities that takes one or more kinds of input and creates an output that is of value to the customer. (p. 35)*

For Davenport (1993) it is:

A process is a specific ordering of work activities across time and space, with a beginning, an end, and clearly identified inputs and outputs: a structure for action. (p.5)

Warboys et al. (1999) define a process as:

A process is structured change, i.e. there is a pattern of events which an observer may recognise across different actual examples (or occurrences) of the process, or which may be made manifest, or implemented, in many different occurrences. (p. 32)

In BPR, the process to be reengineered is the so-called business process. Davenport describes a business process as "simply a structured, measured set of activities designed to produce a specified output for a particular customer or market". Riemer (1998) describes business processes in an object-oriented style: "business processes are series of steps that change states of business objects (that is, customers, orders and inventory), thereby causing business events". However, we should remember that customer-orientation concerns BPR. Therefore, the performance of business processes should not only fulfill the aims of the management but must also satisfy the requirements of the customers. From these concepts we may infer that business processes begin and end with clients, and the importance of business processes depends on customers.

Business Process Reengineering Steps

Unlike the management or development of business processes, where also rely on dealing with current systems, BPR means radically modifying the said systems.

That can be extremely time-consuming, expensive and dangerous. Unless you manage to successfully complete each of the steps, your attempts at change can fail.

Step #1: Identity and Communicating the Need for Change : This can be a piece of cake, if you're a tiny startup. You find that there is a high user drop-off rate in your company, send a text to your co-founder and suggest a pivoting path.

It can be much harder for a company though. There will always be people, both from the management side and from the staff, who are satisfied with things as they are. The first might be afraid it would be a sunken investment, the later for security of their jobs.

So, you'll need to persuade them why making the shift is crucial to the company. If the firm's not doing well, it shouldn't be too hard. However, in some cases the problem is that the business is not doing as well as it should be. That is to say, you should be doing your work. What types of processes do not work? In certain ways, does the rival do better than you? Worse, then?

You will need to come up with a very detailed strategy, involving members from various departments, once you have all the details. The management would have to play the role of salespeople: to express the grand dream of transformation, to explain how it can positively affect even the lowest-ranking employee.

Risk of Failure: Not Getting Buy-In From The Company However, if you fail to do this, your attempts to reengineer your business process may be doomed to fail long before they even started.

Business process re-engineering will have a significant effect on everyone in the business and that can also be a drastic shift for others. For example, some workers might think if you find a better way to work (which is a real possibility) you'll let them all go.

In these cases the initiative may fail, even though the management is on board, because the employees are not engaged.

Typically, workers may get buy-in by inspiring them or showing them alternative opinions, they were not aware of. However, sometimes the lack of employee engagement might be due

to a poor culture in the workplace – something that may need to be resolved before any BPR initiatives begin.

Getting your employee to commit to change isn't easy. There are a bunch of <u>change</u> <u>management models</u> that help you accomplish this, though. Some of our favorites include the <u>ADKAR Model</u> and

Bridge's Transition Model.

Step #2: Put Together a Team of Experts

As with any other project, business process reengineering needs a team of highly skilled, motivated people who will carry out the needed steps. In most cases, the team consists of:

 \checkmark Senior Manager. When it comes to making a major change, you need the supervision of someone who can call the shots. If a BPR team doesn't have someone from the senior management, they'll have to get in touch with them for every minor change.

✓ **Operational Manager.** As a given, you'll need someone who knows the ins-and-outs of the process – and that's where the operational manager comes in. They've worked with the process(es) and can contribute with their vast knowledge.

✓ **Reengineering Experts.** Finally, you'll need the right engineers. Reengineering processes might need expertise from a number of different fields, anything from IT to manufacturing. While it usually varies case by case, the right change might be anything – hardware, software, workflows, etc.

Risk of Failure: Not Putting the Right Team Together

There are several different ways this one can get messed up. For example, if the tea miscomprised of people with a common point of view and goal, they can not be able to adequately identify the problems /solutions.

Or, the team may include too many men, or too few. In the first example, the decisionmaking process may be delayed because of opposing opinions. In the later era, there may not be enough experts in some fields to establish effective solutions.

It is difficult to bring all that down as a structure, since it depends on the project itself. However, there is one thing that benefits any BPR team: having a team of enthusiastic (and yet unbiased) people, optimistic and passionate about making things happened for a difference.

Step #3: Find the Inefficient Processes and Define Key Performance Indicators (KPI):

You will need to identify the right KPIs once you have the team ready and are about to kickoff the initiative. You don't want to adjust to a new method, and Instead remember that you haven't noticed any expenses – BPR's concept is to minimize, not the other way around.

Although KPIs usually vary depending on the process you optimize, the following may be very typical

• Manufacturing

- ✓ Cycle Time The time spent from the beginning to the end of a process
- Changeover Time Time needed to switch the line from making one product to the next
- ✓ **Defect Rate** Percentage of products manufactured defective
- ✓ **Inventory Turnover** How long it takes for the manufacturing line to turn inventory into product
- Planned VS Emergency Maintenance The ratio of the times planned maintenance and emergency maintenance happen.
- IT

✓ Mean Time to Repair – Average time needed to repair the system / software / app after an emergency

✓ Support Ticket Closure rate – Number of support tickets closed by the support team divided by the number opened.

✓ **Application Dev.** – The time needed to fully develop a new application from scratch

✓ **Cycle Time** – The time needed to get the network back up after a security breach

Once you've identified the exact KPIs, you'll need to go after each operation. The best way to do this is by modeling business processes. Although evaluating processes as a framework can be challenging, it is much simpler if you've got it written down step by step.

This is where the operational manager comes in handy-they make it marginally easier to define and analyze the processes.

Usually, there are 2 ways to map out processes:

•**Process Flowcharts** – the most basic way to work with processes is through flowcharts. Grab a pen and paper and write down the processes step by step.

•Business Process Management Software – When you're more tech-savvy, the process automation tools will make it much simpler. For starters, you can use to digitize your processes, set deadlines etc. Simply using such tools could eventually optimize the said processes as it enables easier communication between employees.

•Risk of Failure: Inability to Properly Analyze Process:

To put it more simply-impatience. It's rare for someone to start reengineering business processes if revenues are soaring and the forecasts look fantastic when things don't go well and companies need dramatic changes. So, hurrying things up and rushing through the review cycle can be very tempting, and beginning the changes.

The thing, however, needs to be done properly with the market review, not hurried through to get to the more exciting pieces.

In the corporate world, there are always time and money constraints and it is the senior management's duty to avoid the temptation to ensure that the correct procedure is carried out. Problematic areas need to be established, key priorities need to be set and business goals need to be described, and this takes time. Ideally, each stage needs input from stakeholders across the company to ensure a complete image is created, with suggestions and ideas from a wide variety of sources being taken into consideration. The next step is to define and prioritize the necessary changes, and the areas and processes to be scrapped.

Step #4: Reengineer the Processes and Compare KPIs Finally, after all of the research and preparation is completed, you can start implementing the strategies and improvements on a small scale.

There isn't anything to say once you get to this stage – what you have to do now is keep putting your ideas into action and seeing how the KPIs hold up. If the KPIs prove the new approach works better, you can start slowly scaling the approach, putting it into practice in more and more processes in the business. If not, then you'll go back to the drawing board and start chalking new ideas.

BPR Examples: Ford Motors

One of the most cited examples of reengineering of business processes is the case of Ford, a manufacturer of automobiles.

The American automotive industry was in a downturn in the 1980s, and Ford wanted to scrutinize some of its departments in an effort to find in efficient processes in an attempt to cut expense. One of their results was that the department payable accounts were not as effective as they should be: their division payable accounts consisted of 500 individuals, as opposed to Mazda's (their partner).

Although Mazda was a smaller company, Ford claimed their department was 5 times larger than it should have been.

Ford management thus set itself aquantifiable objective : to reduce the number of clerks employed in accounts payable by a few hundred workers. Then, they launched an effort to reengineer the business process and find out why the department was so over- staffed.

They analyzed the current system, and found out that it worked as follows:

- 1) When the purchasing department would write a <u>purchase order</u>, they sent a copy to accounts payable.
- 2) Then, the material control would receive the goods, and send a copy of the related document to accounts payable.
- 3) At the same time, the vendor would send a receipt for the goods to accounts payable.

Then, the clerk at the accounts payable department would have to match the three orders, and if they matched, he or she would issue the payment. This, of course, took a lot of manpower in the department.



So, as is the case with BPR, Ford completely recreated the process digitally.

1) Purchasing issues an order and inputs it into an online database.

2) Material control receives the goods and cross-references with the database to make sure it matches an order.

3) If there's a match, material control accepts the order on the computer.



This way, the need for accounts payable clerk stomatch the orders was completely eliminated.

BPR- Current Focus

BPR's Current focus we can understand with some sets of examples:

Business process reengineering examples : Fast food business An example of business process reengineering we can cite is fast food business.

You can get unexpected results by completely redesigning the distribution of the goods. The process goes like all others in this type of restaurant, the customer orders, the order goes to the kitchen which prepares the meal and then delivers it to the user.

Business process analysts : Business process analysts found that if the meal portions were already cooked in a separate center and distributed regularly to the restaurants, it would be more beneficial. When the customer orders, employees bring it together and deliver. This is a full process improvement, resulting in improved efficiency, less injuries, improved employee satisfaction and increased capacity to concentrate on consumer needs, all without compromising quality.

Business process reengineering examples: company selling commemorative cards

Renewing the stock and updating the design of the cards is constantly important in a business that provides items such as Christmas, anniversary, commemorative cards etc.

For average it takes three months to hit the shelves for new products. It's easy to understand through market research that hopefully there will be new items every month.

It is easy to assume, at first glance, that the delay was at the stage of production. Once the process is analyzed and mapped it is confirmed that the stage of formation was the most time consuming.

The creative team also gets the concept and many workers start doing the same task (duplicate actions), or an idea takes days to get off the page.

With this information, we can redesign the process completely, defining a cross-functional team from concept and creation, with incredible results in speed, costs and effectiveness.



Summary

The chapter six is Business Process Reengineering (BPR), which discussed the introduction o BPR and including the steps of BPR. The BPR has also includes the current focus in the organization.

6.5. Self-Assessment Questions

Business Process

What do you Process of Business Process Reengineering?

Discuss the Process of Business Process Reengineering?

BLOCK-2

INTRODUCTION

The Present block deals in one unit with one credit and having three chapters are as follows. Which started with Introduction to MISat Management levels, Strategic Level Planning, Operational Level Planning, Economic and Behavior Theories, **Summary and some** Self-Assessment Exercise.

CHAPTER 7

MIS ORGANIZATION STRUCTURE

OBJECTIVE

After completion of this lesson the student will be able to understand:

Introduction to MIS at Management levels

Strategic Level Planning, Operational Level Planning

Economic and Behavior Theories

Summary

Self-Assessment Exercise

Introduction to MIS at Management levels

The organizational system provides environmental system products and services, the organizational information system provides all the data and information provided by the organizational system and the management information system provides the organizational information system with the management-oriented information.



Fig: The Organizational System
Further, discussing about the management information system according to G.B. Davis and M.H. Olson, "Management Information System is defined as an integrated system for providing information to support operations, management, and decision-making functions in an organization".

The program uses software and computer hardware, manual processes, 13 model for research, planning, control and decision making; and a database. The fact that it is an integrated device does not imply that it is a single, monolithic structure; rather, it implies that the pieces fit into a general arrangement. According to Murdick and Ross, "The Management Information System is the means for connecting the managed operating systems by exchange of information"14. According to Walter J. Kennevan the structure of Management Information System is depicted as shown in this figure.



Fig: Management Information System Structure Source for figure: Kennevan W.J., "MIS Universe, Data

Management Sept'1970

Management Information System (MIS) can be defined as a wide class of information systems designed to provide the information required by managers to make successful decisions. This makes MIS a common word in the information technology market. The MIS has been described as a pyramid structure (Figure 2.8) in which the bottom layer consists of transaction processing information, status inquiries, etc.; the next level consists of information resources to support day-to-day operations and control; the third level consists of information system resources to assist in tactical planning and management control decision making; and the top I Growing level of information processing may allow use of lower-level data provided; but new data may also be added. For example, some of the information to support management and decision making is provided by the data gathered for the processing of the transactions, though others might be new data on external activities. Conceptually, without computers, a management information system can exist but it is the computer's power that makes MIS feasible. The problem is not whether computers should be used in 47 information systems management, but to what degree the use of information should be computerized. The user-machine system principle means certain tasks are best performed by humans, while others are best performed by software Management information systems usually provide the basis for the incorporation of information processing within the enterprise. Diverse information system integration can be accomplished by requirements, guidelines, and procedures provided by MIS feature. The trend in information system design is to create a database in which data items are distributed across several sections/units of an entity and made accessible to a variety of users on a consistent basis. That is where the machine works superior to humans.

As the company gradually grows, the need for MIS is being increasingly felt. The organization's scale and complexity are increasing amid new problems. It is the essential part of the study of management science that tries to solve this problem by supplying the right individual with relevant information in the right form and at the right time. An organization's information system can be built through a computer process or in a simple organization, the management can rely on records, reports on schedules etc. So normally the design of the information system will depend on:

- a) The size of the organization and
- **b)** The need for details of the subject.

Strategic Level Planning, Operational Level Planning

Strategic planning is the mechanism by which an organization determines its strategy, or course, and makes decisions about allocating its resources to execute this strategy.

Strategic planning usually deals with the whole company rather than just an isolated entity, with at least one of the following three main issues:

- ✓ What do we do?
- ✓ For whom do we do it?
- ✓ How do we excel?

For example, the first and third questions are those that motivate an acquisition. Acquisitions are thus strategic choices. Strategic decisions usually look at 3 to 5 years, but some are expanding their dream to 20 years (long term). Because of the time period and the complexity of the problems raised, mishaps that can arise during the implementation of a strategic plan are caused by major uncertainty and may be very distant from management control (war, geopolitical shocks, etc.). Such errors are called "strategic threats" in accordance with their possible consequences. Untapped prospects can also be seen as competitive threats, but we won't be discussing certain elements of upward threats in this article.

Tactical planning:

It is short term planning illustrating the existing activities of different parts of the Organisation. Short Range is commonly defined as a period of time in the future which extends approximately one year or less. Managers use organizational planning to determine what the various parts of the company will do to make the company effective for a year or less into the future at some point. Tactical plans are typically established in the production, marketing, staff, finance and plant facilities fields. Because of the time span and the complexity of the problems raised, mishaps theoretically arising during the implementation of a tactical strategy would be protected by moderate uncertainties which should be subject to managerial control (next year shipping costs, energy usage, but not a major outage, etc.) than strategic

ones. Such errors are called "tactical threats" in accordance with their possible consequences.

Tactical Planning Showing What Who When & How



a) Specific Goals with Fixed Deadlines:

Suppose the aim of your company is to become the town's largest shoe retailer. This large focus will be broken down by the operational plan into smaller, actionable objectives. The goal(s) should be highly precise and have set targets for stimulating action

- expanding to two stores within three months, increasing at 25 percent per quarter, or raising sales to \$1mn with in six months, etc.



b) Budgets:

The tactical plan would identify budgetary criteria for achieving the objectives set out in the strategic plan. This will include the budget for recruiting employees, marketing, purchasing, manufacturing, and running the company's day-to-day operations. Listing the outflow / inflow of sales is also a preferred method.



c) Resources:

The organizational plan will list all the tools that you can utilize to achieve the goals of the company. This would include human resources, IP, currency, etc. Again, it's encouraged to be highly descriptive.



d) Marketing, Funding, etc.

First, the tactical plan will list the immediate marketing, procurement, funding, manufacturing, retailing, and PR strategy of the company. Its scope should be consistent with the objectives outlined above.



Operational planning:

It is the process of linking strategic goals and objectives to tactical goals and objectives. It describe smile stones, conditions for success and explains how, or what portion of, a strategic plan will be put into operation during a given operational period. An operational plan addresses four questions.

- $\checkmark \qquad \text{Where are we now?}$
- ✓ How do we get there?
- $\checkmark \qquad \text{Where do we want to be?}$
- ✓ How do we measure our progress?

Operational risks are those arising from the individuals, structures and procedures a business works by and can include other risk groups, such as fraud, legal risks, physical or environmental risks. Operational risks are those arising from insufficient or ineffective internal procedures, individuals and structures or from external incidents (human or natural hazards). A collapse of the tailings dam, an open pit spill, a black out (man-made or natural external hazard), and an explosion in a processing plant are all operational hazards that create operational hazards.



e) Single UsePlans

These plans are created for events/activities with a single occurrence. This can be a one-time sales program, a marketing campaign, a recruitment drive, etc. Single use plans tend to be highly specific.

f) Ongoing Plans

Those plans can be continually used in various environments. Current proposals may be of various types, such as:

g) Policy:

A policy is a general document dictating how managers can approach a issue. This affects microgroove decision-making. Examples of policies are clear arrangements to hire staff, fire contractors etc.

h) Rule:

Laws are unique rules for an Organisation to work according to. The laws are supposed to be hard coded, and should be strictly followed. "No smoking at the premises" or "Employees are expected to arrive by 9 a.m." are two examples of laws.

i) Procedure:

A protocol defines a step-by-step process designed to accomplish a particular goal. For example: most companies have comprehensive guidelines on employee hiring and training, or raw materials sourcing. Such lines of instructions may be called procedures.

On going plans are produced ad-hoc, but can be replicated and updated when necessary.

Operational strategies match the business strategy for the company with the company's real day-to-day operating. It's here where the macro meets the micro. Running a productive organization now lacks only the specific targets to be given equal consideration, but also how the targets are being achieved on a daily basis, hence the need for more detailed planning.

Given that upper management typically understands the enterprise as a whole better than lower-level managers do, upper management usually creates strategic plans. Since lowerlevel managers typically understand the day-to-day organizational activities better, they usually develop tactical and operational plans. Since strategic plans are usually longer-term and are surrounded by more confusion about their implementation and implications (one exception: tailings management planned before closure, even after closure) strategic plans are typically less comprehensive than tactical plans. Thus, the following can be inferred for a list of "top hazards" discussed in a report we reviewed recently:

Economic and Financial Hazards	Geopolitical Hazards	Social Hazards	Business Hazards	Infrastructure and Environment
Rise of interest rates is only Strategic	Potential global conflict is only Strategic	Social turmoils is only Strategic	Renewable energy ends up being Tactical	Large scale power outageends up being Operational
Investors panic is only Strategic	Resource availability is only Strategic	Workforce skills ends up being Tactical	Competitive shock ends up being Tactical	Environmental issues ends up being Operational
Piracy and pirated goods ends up being Tactical	Cyber-threats ends up being Operational			

Strategic, tactical, and operational planning example.

Despite their differences, however, political, tactical and operational planning are inextricably related. Managers need both tactical and strategic planning systems and in order to be successful both systems must be closely related. Thus, it can be concluded that Enterprise Risk Management (ERM) should treat these relations very closely, and the use of multiple Probability Impact Graph (PIG) matrices with multiple arbitrary scales is certainly not a logical, transparent solution.

Economic and BehaviorTheories

Introduction

Just think of the last time you purchased a personalized product. It could have been a desktop computer. You may have preferred to easey our decision taking by going for a common brand or the one you previously owned. You may have then visited the web site of the manufacturer to position your order. But the decision-making process didn't end there, because you now had to configure your model by selecting from various product attributes (processing speed, hard drive ability, screen size, etc.) and you were still unsure which features you really wanted. Most technology manufacturers will be displaying a base model at this point with choices that can be changed according to customer preferences.

The way these product options are presented to consumers affects the final purchases made and highlights a range of principles from the theories of behavioral economics (BE). First, a default option is the base model displayed in the customization engine. The more unsure customers are about their choice, the more likely it is that they are going to go with the norm, especially if it is specifically presented as a suggested setup. Second, the supplier can frame options differently by either employing a configuration mode 'add' or 'delete' (or something in between). Customers start with a base model in an add mode, and then add more or better options. The opposite cycle takes place in a delete frame, whereby customers have to unselect options or downgrade from a fully loaded configuration. Past research shows users end up preferring more apps when they're in a delete rather than an add-frame (Biswas, 2009). Finally, before customization, the alternative framing technique will be correlated with different price anchors which can affect the perceived value of the offer. If the final product configured ends up with a £1500 price tag, the cost would likely be viewed as more appealing if the initial default configuration was £2000 (full loaded) rather than £1000 (base). Sellers must engage in a cautious testing phase to find a sweet spot — an optional pricing technique that maximizes revenue but is set at a default price that dissuades a minimum number of potential customers from even making a purchase.

Rational Choice:

In a perfect world, customer preferences will have no effect on defaults, frames, and price anchors. Our decisions will be the product of careful cost and benefit weighing, and guided by existing preferences. We'd still be taking good choices. The economist Gary S.Becker first presented a set of theories regarded as the foundations of the so-called 'rational choice' theory in the book The Theoretical Approach to Human Behaviour 1976. The theory assumes human actors have stable expectations and devote themselves to optimizing behaviour. Becker, who applied rational choice theory to contexts ranging from crime to marriage, claimed that empirical disciplines such as sociology could benefit from the concept of 'rational man' promoted by neoclassical economics from the late 19th century onward. However, the decade of the 1970s also witnessed the emergence of the opposite flow of thought, as discussed in the next section.

Prospect Theory:

While economic rationality affected other fields in the social sciences from the inside out, psychologists gave an out-of-reality check to dominant economic theory through Becker and the School of Chicago. Most importantly, a series of papers published by Amos Tversky and Daniel Kahneman tended to contradict assumptions regarding human existence held by traditional economies. Perhaps they are best known for developing prospect theory (Kahneman & Tversky, 1979), which shows that decisions are not necessarily optimal. The way decisions are framed, i.e., it is context-dependent, affects our ability to take risks.

Bounded Rationality

Long before the work of Tversky and Kahneman, 18th– and 19th- century theorists were already interested in economic life's psychological underpinnings. Nevertheless, during the neoclassical revolutionattheturnofthe20thcentury,academicsgraduallysought to emulate the natural sciences, as they wanted to distinguish themselves from the then "unscientific" field of psychology (see review in Camerer, Loewenstein and Rabin, 2011). Later on, the significance of psychologically informed economics was expressed in the idea of 'bounded rationality, 'a phrase identified with the 1950s work of Herbert Simon. Human minds have to be considered in relation to the world in which they developed according to this view. Decisions aren't always brilliant. There are constraints on the processing of human intelligence, due to knowledge (or intelligence) limitations and computational capacities (Simon, 1982; Kahneman, 2003).

Gerd Gigerenzer's work on <u>"fast and frugal" heuristics</u> later built on Simon's ideas and proposed that the rationality of a decision depends on structures found in the environment. People are "ecologically rational" when they make the best possible use of limited information-processing abilities, by applying simple and intelligent algorithms that can lead to near-optimal inferences (Gigerenzer & Goldstein, 1996). Human minds have to be considered in relation to the world in which they developed according to this view. Decisions aren't always brilliant. There are constraints on the processing of human intelligence, due to knowledge (or intelligence) limitations and computational capacities. Although the concept of human limits to rationality in economics was not a completely new thinking, the research program 'heuristics and prejudices' of Tversky and Kahneman made important methodological advances, in that they proposed a systematic experimental approach to understanding economic decisions based on evaluating real choices made under different conditions. Around 30 years later their theory entered the mainstream, resulting in a increasing popularity in the fields of education, public relations and commerce.

7.3.4. Mental Accounting

The economist <u>Richard Thaler</u>, a keen observer of human behavior and founder of behavioral economics, was inspired by Kahneman & Tversky's work (see Thaler, 2015, for a summary). Thaler coined the concept of mental accounting. People speak of interest in relative rather than absolute terms, Thaler states. They derive pleasure not only from the valuation of an item, but also from the nature of the deal-its usefulness for transactions (Thaler, 1985).

Moreover, humans often fail to take full account of the costs of opportunity (tradeoffs) and are vulnerable to the fallacy of the sunken cost. The propensity of customers to work with mental accounts is expressed in various fields of applied behavioural science, especially in the financial services industry. Examples include banks that sell several accounts with savings aim labels that make mental accounting more clear, as well as third-party platforms that deliver aggregate financial information to customers through different financial institutions (Zhang & Sussman, 2018).

Another mental accounting definition reflects the fact that people don't like spending money. We are having paying pain (Zellermayer, 1996), because we are averse to failure. Paying discomfort plays a crucial role in market self-regulation in holding spending in check (Pre lec & Loewenstein, 1998). For credit card transactions, this pain is assumed to be minimized, since plasticis less measurable than cash, capital depletion (money) is less noticeable, and payment is delayed. Different types of people feel varying rates of payment discomfort, which can in fluence decision making about spending. For example, Tightwads feel more of the pain than spend thrifts. Tightwads are also especially prone to marketing contexts, which make spending less expensive (Rick, 2018).

Dual-System Theory

Daniel Kahneman uses at heoretical dual-system paradigm (which gained a foothold in the 1990s' cognitive and social psychology) to explain why our actions and decisions frequently struggle to adhere to traditional notions of rationality. System 1 consists of logical, automated, experiential, and fairly in conscious thought processes. System 2 is more thought-provoking, regulated, deliberative, and analytical. System 1 affected decisions are rooted in experiences arising from readily accessible mental information. On the other side, Device 2, controls or offers power over mental activities and overt behavior — often unsuccessfully.

Temporal Dimensions

Another essential BE area applies the human judgments and expectations to a time dimension. This field recognizes people are biased towards the present and poor predictors of future interactions, expectations of interest, and behaviour.

Time Discounting and PresentBias

Present events are weighted more heavily than potential events, according to timediscounting hypotheses (Frederick, Loewenstein & O'Donoghue, 2002); for example, many people choose to receive £100 over £110 in a month's time now. Discounting is nonlinear, and its intensity over time is not constant. People's choice to receive £100 a week from now on versus £110 a month and a week from now on won't be the same as their choice to receive £100 a year from now versus £110 a year and a month from now on. Though in both cases the difference is one month, the value of events that are further in the future falls slower than those closer to the present (Laibson,1997).In addition to inertia, future discounting is another key issue which explains low savings rates for retirement. One piece of research shows that it is possible to create behavioral improvement by helping people communicate with their future selves. In the survey, people who saw themselves as an age-advanced avatar were more likely to consider potential financial incentives than immediate ones (Hersh field et al.,2011).

Diversification Bias and the Empathy Gap

Time inconsistency often arises when our present self does not correctly predict our future self's desires, a point well demonstrated by the diversification bias (Read, & Loewenstein, 1995). I may select the variety pack of cereals while shopping for several potential consumption episodes, only to find two weeks later that I would have enjoyed more of my breakfasts if I had just stuck to my favorite type. Diversification bias should be especially high in the case of food if you make your buying decision while you're satiated (e.g. right after a meal). This failure to fully understand the impact of emotional and physiological conditions on decision-making is known as the (hot-cold) empathy divide, a concept coined by one of the pioneers of behavioral economics, George Loewenstein. Hot states include a variety of emotional influences, ranging from negative feelings associated with high levels of excitement (e.g., frustration or fear) to sensation (e.g., pain) and drive (e.g., appetite, addiction-related cravings, or sexual arousal) (Loewenstein, 2000). The best known example occurs in sexual decision-making, whereby men in a 'cold', unaroused state frequently foresee using a condom during their next sexual encounter, but they may fail to do so when they arein an aroused 'hot state' (Ariely & Loewenste in 2006).

Forecasting and Memory

We are always too hopeful when we're making plans for the future. For example, by underestimating how long it will take us to complete a task and ignoring past experience, we are subject to committing the planning fallacy (Kahneman,2011). Similarly, we can overestimate the strength of our emotions when we try to predict how we'll feel in the future (Wilson & Gilbert, 2003). For example, the level of happiness I expect to feel during my next holiday is likely to be higher than how I'll rate it during the actual experience. Various reasons for this mistake exist, including how were call past events. My recollection of a past holiday is likely to be non-representative of the overall holiday (More wedge, Gilbert, & Wilson, 2005), and I should measure my last holiday centered, for example, on the most pleasant points and their end, rather than the sum of every moment of the experience (the peak-end rule; Kahneman & Tversky, 1999). Finally, as my holiday days go by, I'll probably get used to it and my joy will level out. The definition of hedonic adaptation implies that changes in conditions appear only to gradually cause pleasure as we get used to new situations (Frederick & Loewenstein, 1999).

Social Dimensions

Contrary to the homo-economic us view of human motivation and decision-making, BE does not believe that people make individual decisions, or follow their own interests. Aside from cognitive and affective (emotional) aspects, a major field of BE often considers social factors, in which decisions are taken by individuals who are influenced by, and rooted in, social contexts.

Trust

Trust, which is one of the reasons for the inconsistencies between real actions and that expected by a model of self-interested actors, allows for social life and permeates economic relations.

Although neoclassical economic theory indicates that faith in strangers is irrational, trust and trust worthiness can be wide spread across societies. Indeed, reciprocity (discussed later) occurs as a central aspect of human relationships and behaviour, and this is accounted for in the trust extended to an anonymous counterpart (Berg et al., 1995).

When people are socially related, confidence and trust worthiness both increases, but the latter decrease when partners come from different social classes, such as ethnicity or race. In addition, individuals of high status are found to be able to create more confidence in others (Glaeser et al., 2000).

In experimental games trust was investigated. Participants are asked to divide money between themselves and another in games of confidence. Player A is required to assess a zero or a higher value initial endowment (e.g., \$5). Then the money is Multiplied (e.g. multiplied

to \$15) by an experimenter and given to Player B, who is then demanded to return a zero or higher value to Player A. The game is about reciprocity and confidence, as Player A must determine how much of the endowment to be offered to Player B in the expectation of getting atleast the same amount back.30 out of 32 first players sent money in the original experiment (Berget al., 1995), and 11 of those 30 decisions resulted in a payback that was greater than the initial amount sent. This finding confuses the prediction which standard economic assumptions provide.

The definition of "betrayal aversion" has been related to confidence (Bohnet, Greig, Herrmann, & Zeckhauser, 2008): If faced with a given probability of bad luck, people take greater risks than the same likelihood of being fooled by another human.

Dishonesty

People usually respect integrity, appear to have strong morality values and want to maintain that dimension of their self- conception (Mazar et al., 2008). Self-interest can clash with the integrity of people as an internalized social norm (a term explored later), but the resulting cognitive dissonance can be resolved by engaging in self-deception, creating the moral "wiggle room" that encourages people to behave in a self-serving way. However, when moral reminders are used, this self-deception may be reduced, as shown by Mazar and colleagues in laboratory experiments. It is therefore nots hocking that a lack of social norms is a general driver of dishonest behaviour, along with high standards, benefits and low costs of external deception, a lack of self-awareness, as well as self-deception (Mazar &Ariely,2006).

Fairness and Reciprocity

Behavioral research on human decision-making in social settings is also focused on games of experiment. Behavioral game theory is the second major theoretical field found in behavioral economics, in addition to behavioral decision theory. These games usually endow players with prizes (e.g. tokens), which change hands based on individual decisions within game rules. This occurs during one or more rounds of play. The outcome of the game is apparent in the way rewards are divided among players, and the results also indicate that people have aversion to in equity,

i.e. in many cases they choose fairness over injustice (Fehr & Schmidt, 1999).

Fairness is connected with a human desire for reciprocity, ou rurge to return the action of another with an equal action. However, reciprocity may have both positive and negative dimensions. As ErnstFehr's research in this field has shown, people's responses to positive acts are always kinder than a self-interest model would expect, but it can also lead to punitive responses to negative behavior on the flipside (Fehr & Gaechter, 2000). Charities often make use of reciprocity to their benefit in the real world. For example, one field experiment investigating donation behavior showed that people who received a large gift with a donation solicitation letter had a 75 percent higher donation frequency compared to a 'no gift' baseline condition (Falk,2004).

Social Norms

Reciprocity was referred to by the sociologist Alvin Gouldner as "generalized moral rule" (Gouldner, 1960). Social norms are tacit or explicit expectations or rules of conduct with in a community or group of people (Dolan et al., 2010), and they are an essential component of identity economics, which considers human behaviors to be the product of both monetary incentives and self- concepts (Akerl of & Kranton,2010).Our preferences are not only a matter of simple tastes; they are often affected by norms, as seen in gender roles, for example Standards are variable across cultures and contexts. For instance, while market rules would dictate that payment is expected for a productor service, social norms are very different—should you want to pay a family member for the meal he's cooked for you (Ariely,2008)? Social principles of trade such as reciprocity and consumer values often coexist in the same domain. For example, while market exchange rules dictate that I should charge a client for a consulting job, on certain occasions I may also give that client free advice, in the hope that the favor will be reciprocated in the future.

Social norms signify acceptable behavior or acts taken by the majority of people (although what is considered 'appropriate' is itself subject to continuous change). In addition to knowledge input (e.g. the sum of money saved by not consuming alcohol), explicit normative input (e.g. how one's level of drinking is relative to the national average) is sometimes used in health behavior improvement initiatives (Diclemente et al., 2001), whereas non-profit organizations often use normative knowledge to affect donation level. One research compared rates of donation for a US public radio fundraiser. If prospective donors were presented with social knowledge signaling criteria (e.g. "We had another participant, they donated \$300"), the total donation amounts increased by up to 12 per cent (Shang &Croson, 2009).

Consistency and Commitment:

Human sensitivity to input from social norms is tied to our desire to retain a positive image of who wear easa individual. When the result of an action challenges this desire, we can change our behaviour, but often we just change our attitudes or beliefs. When this happens we typically turn to 'rationalization,' a form of cognitive dissonance reduction (Festinger, 1957). In contrast to the objective view of human decision-making, where straightforward decisions are made, rationalization implies the opposite: impulses may also justify after-fact actions (March 1978). The cognitive dissonance theory is an example of the human need to have a persistent and consistent self-image (Cialdini, 2008). It is best to be consistent when making a promise in an effort to suit future behavior, particularly if it is done in public. Precommitting to a target is also one of the most widely used coping strategies for creating meaningful change.

To help workers save more time, the 'Save More Tomorrow' initiative highlights a variety of behavioral differences and solutions, including dedication (Thaler & Benartzi, 2004). The system provides workers with the opportunity to commit to a gradual rise in their savings rate in the future if they earn an raise. The plan prevents the feeling of loss that will be experienced by raising the discretionary income, because customers are committed to saving future income increases. The reluctance of the people makes it more likely that they will stay with the plan, as they have to opt out.

Herd Behavior and Market Bubbles

The vulnerability of people to social influences is also apparent in group action, which occurs when people do as others do, rather than using their own knowledge or making independent decisions. In philosophy and crowd psychology the herding principle has a long history. It is especially important in the field of finance, where it was addressed in relation to investors' collective irrationality, including stock market bubbles (Banerjee, 1992). If prices are pushed much higher than the irintrinsic value, economic (or asset) bubbles emerge. Well known examples of bubbles include the late 1990s US Dot-com stock market bubble and mid- 2000s housing bubble. Speculative bubbles are fuelled by infectious investor excitement (seal so herd behavior), and stories that explain price rises, according to Robert Shiller (2015), who warned of both of these occurrences. Powerful feelings, such as envy and anticipation, over whelm concerns about the real value of investment. Other prejudices encouraging bubbles include over- confidence, anchoring, and representativeness that lead investors to view rising prices as a continuing phenomenon that will encourage them to chase the market (Fisher, 2014). A suddenand rapid fallin prices is typically accompanied by economic bubbles, often

Page | 86

known as a crash.

Summary

Chapter seven discussed about the MIS organization Structure. This chapter introduces with MIS at Management Levels with strategic level planning and operation level planning. The economic and behavior theories discussed briefly.

Self-Assessment Questions

Discuss the MIS Organization Structure?

What is strategic and Operation level planning?

CHAPTER 8

ENTERPRISE RESOURCE

PLANNING

OBJECTIVE

After completion of this lesson the student will be able to understand:

Introduction to Basics of ERP

Evolution of ERP

Enterprise Systems in Large Organizations

Benefits and Challenges of Enterprise System

Summary

Self-Assessment Exercise

Introduction to Basics of ERP

An enterprise resource planning system is a fully integrated enterprise management system that encompasses a company's functional areas such as logistics, development, finance, accounting and human resources. It organizes and incorporates processes of activity and knowledge flows in order to allow efficient use of resources such as people, material, money and machine. Promises corporate management planning.

✓ Onedatabase

✓ Oneapplication

 \checkmark One user interface

For the entire organization where production, distribution, finance and sales once were regulated by disparate structures.

Enterprise resource planning systems or enterprise systems are business management software systems which include modules that support functional areas such as planning, manufacturing, sales, marketing, distribution, accounting, financial, human resource management, project management, inventory management, service and maintenance, transport and e-business. The software architecture promo test he seamless integration of modules, enabling continuously clear flow of information between all functions within the enterprise.

Corporate computing with ERPs allows businesses to adopt a new, streamlined system by replacing or reengineering their often- incompatible legacy information systems. American Production and Inventory Management Society (2001) described ERP systems as "a method for effectively preparing and managing all there sources needed to take, produce, ship and account for customer orders in a manufacturing, distribution or service firm."

We cite several examples from the existing literature to better clarify the concept: "ERP (Enterprise Resource Planning Systems) consists of a commercial software package providing the seamless incorporation of all information flowing through the company — financial, accounting, human resources, supply chain, and consumer information" (Davenport, 1998). "ERP systems are configurable bundles of information systems that combine information and information-based processes within and across organizational functionals pheres" (Kumar & Van Hillsgersberg, 2000). "One database, one program and a single enterprise-wide interface" (Tadjer,1998).

"ERP systems are computer-based systems designed to process the 12 transactions of an enterprise, enabling coordinated and real-time planning, development, and customer response" (O'Leary, 2001). Enterprise Resource Planning acronym ERP. ERP uses ERP software programs to enhance the efficiency of the resource planning, management control, and operational control of organizations. ERP software is multi-module application software that incorporates operations around functional divisions, from project preparation, sourcing of components, inventory management, delivery of goods, to order monitoring.



ERP Definition -

A Systems Perspective ERP, often like other IT and business concepts, are defined in many different ways. A sound definition should several purposes:

- It provides a base for defining more detailed concepts in the field ERP software, ERP systems, ERP implementation etc.
- It provides a common ground for comparison with related concepts CRM, SCM etc.
- It helps answer the basic questions in the field-benefits of ERP, the causes of ERP failure etc.

A Systems Theory-based concept of ERP can serve those purposes.ERP is a program that has goals, elements, and boundaries. The aim of an ERP program — ERP's aim is to enhance and streamline internal business processes, usually involving redesign of current business processes

The Components of an ERP System-

Popular components of a Management Information System (MIS) are components of an ERP system. ERP Software-ERP software based on the modules is the foundation of an ERP program. Within an organization, each software module automates business operations from a functional location. Popular ERP software modules cover an organization's aspects of product preparation, buying components, inventory management, product delivery, order monitoring, finance, and accounting and human resources. Business Processes-Business processes within an enterprise fall into three categories of strategic planning, control of management and control of operations. ERP was proposed as tools to help or streamline business processes at all levels. However, much of ERP's progress was due to the convergence of the various functional divisions. ERP Users-ERP systems users are the organization's workers at all levels, from staff, supervisors and mid- level managers to executives. Hardware and Operating Systems-Several large UNIX-based ERP systems. Other common operating systems to run ERP software include Windows NT and Linux. Many operating systems can be used on legacy ERP systems. The boundary of an ERP system-Typically the boundary of an ERP system is smaller than the boundary of the company implementing the ERP system. By comparison, the supply chain systems and ecommerce systems cap apply to the vendors, 13 dealers, associates, and consumers of the company. However, in practices everal implementations of ERP require the integration of ERP with

external information systems. Enterprise resource planning (ERP) is the term used by the industry to describe a wide range of activities enabled by multi-module application software that helps a distributor or other organization manage the important parts of their business.

These sections may include product planning, ordering components, inventory management, communicating with vendors, providing customer support, and monitoring orders. ERP can also provide program modules for an enterprise's finance and human resources aspects. Some of the bigger players in the market for outsourcing ERP are SAP, People Soft and J. Edwards, D. Newcomers include Oracle, Microsoft and IBM. ERP stands for Enterprise Resource Planning ERP is a way of combining an organization's data and processes into one program. Usually ERP systems would have several components including hardware and software, most ERP systems use a single database to store data for the different functions used in the enterprise to achieve integration. Originally, the term ERP applied to how a large corporation intended to use vast organizational resources. ERP systems were used in the past in larger, more modern business forms. The use of ERP, however, has changed and is extremely detailed, today the word can refer to any form of organization, irrespective of what industry it falls. In fact, In almost every form of organization-large or small-ERP systems are used. To be considered an ERP software system, it has to provide functionality for two or more systems to an organization. While there are some ERP packages which only cover two organizational functions (QuickBooks: Payroll & Accounting), most ERP systems cover a number of functions. ERP systems of today will cover a wide variety of functions and combine them into a single centralized database. For example, functions such as Human Resources, Supply Chain Management, Customer Relations Management, Financials, Manufacturing Functions, and Warehouse Management functions were all once stand-alone software systems, usually housed with their own database and network, today they can all fit under one umbrella-the ERP framework.



Integration is Key to ERP:

Integration is an integral part of ERP's. The main purpose of ERP is to incorporate and unify data and processes from all areas of an enterprise for easy access and work flow. Typically, ERP achieves integration by building a common database using multiple software modules that provide different are as of an enterprise with specific business functions. While the optimal configuration would be one ERP system for an organization as a whole, many larger organizations typically develop one ERP system, and then build on the framework and external interface for other stand-alone systems that could be more efficient and work better in meeting the needs of an organization. This form of configuration will typically take time and involves lots of hours of work.

The Ideal ERPSystem:

An optimal ERP framework is by using a single database, containing all data for various software modules. These soft ware modules can include:

- ✓ Manufacturing: Some of the functions include, engineering, capacity, workflow management, quality control, bills of material, manufacturing process, etc.
- ✓ Financials: Accounts payable, accounts receivable, fixed assets, general ledger and cash management, etc.
- ✓ Human Resources: Benefits, training, payroll, time and attendance, etc.
- ✓ Supply Chain Management: Inventory, supply chain planning, supplier scheduling, claim processing, order entry, purchasing, etc.
- ✓ Projects: Costing, billing, activity management, time and expense, etc.
- ✓ Customer Relationship Management: sales and marketing, service, commissions, customer contact, calls center support, etc.
- ✓ Data Warehouse: Usually this is a module that can be accessed by an organization's customers, suppliers and employees.

8.2 Evolution of ERP

The evolution of Manufacturing Requirements Planning (MRP) II is

ERP (Enterprise Resource Planning). From a market perspective, ERP has evolved from manufacturing process management to the incorporation of company-wide backend

processes. ERP has grown from the technical perspective from legacy deployment to a more robust, tiered client-server architecture.

Timeline	System	Description		
1960's Inventory Management & Control		Inventory Management and control is the combination of information technology and business processes of maintaining the appropriate level of stock in a warehouse. The activities of inventory management include identifying inventory requirements, setting targets, providing replenishment techniques and options, monitoring item usages, reconciling the inventory balances, and reporting inventory status.		
1970's	Material Requirement Planning (MRP)	Materials Requirement Planning (MRP) utilizes software applications for scheduling production processes. MRP generates schedules for the operations and raw material purchases based on the production requirements of finished goods, the structure of the production system, the current inventories levels and the lot sizing procedure for each operation.		
1980's	Manufacturing Requirements Planning (MRP II)	Manufacturing Requirements Planning or MRP utilizes software applications for coordinating manufacturing processes, from product planning, parts purchasing, inventory control to product distribution.		
1990's	Enterprise Resource Planning (ERP)	Enterprise Resource Planning or ERP uses multi-module application software for improving the performance of the internal business processes. ERP systems often integrate business activities across functional departments, from product planning, parts purchasing, inventory control, product distribution, fulfillment, to order tracking. ERP software systems may include application modules for supporting marketing, finance, accounting and human resources.		

The following table summarizes the evolution of ERP from 1960s to 1990s.

ERP systems are now omnipresent in large corporations and the latest push by vendors is to repack them for small to medium-sized enterprises (SMEs). This migration has many implications to overcome by understanding the past and evolution of ERP systems and their current architectures. The ERP systems' advantages and disadvantages will affect their penetration n this new market. It explains the market position and general strategy of the major network providers in preparation for this move. The chapter concludes that the growth and progress of the adoption and advancement of ERP in the new millennium is based on the capacity of the legacy ERP program to expand to Customer Relationship Management (CRM), Supply Chain Management(SCM) and other expanded modules and integration with internet-enabled devices.

The initials ERP emerged as an extension of MRP (planning of material specifications, later planning of capital for manufacture) and CIM (Computer Integrated Manufacture). This was founded in 1990 by research and consulting firm Gartner. ERP systems now tend to protect all of an enterprise's core operations, irrespective of the company or charter of the entity. These programs can now be used in non- manufacturing, non-profit, and government companies.

To be called an ERP system, a software package must provide at least two systems with the features. For example, a software package that includes both payroll and accounting functions may potentially be known as an ERP software package Examples of modules in an ERP that previously may have been stand-alone applications include: product lifecycle management, supply chain management (e.g. ordering, manufacturing and distribution), warehouse management, customer relationship management.

Customer Relationship Management (CRM), Customer Order Processing, Electronic Transactions, Financial Services, Human Resources, and Decision Support System.

Enterprise Systems in Large Organizations:

In the 21st century, information technology has become one of the most critical tools for the service and management of organizations. It covers all aspects of a modern company, from customer service to operations, social media and security. Over time, technology generates new jobs such as creators of mobile apps, social media and business intelligence researchers, IS experts and computer architects. Twenty, or perhaps twenty, years ago, these jobs did not exist. Information technologies that incorporate enterprise-wide roles, known as Enterprise Systems, have become the foundation of modern organizations.

Companies are looking for ways to enhance their business processes in order to function efficiently. Companies are constantly looking at technology, such as business systems, for solutions that enhance their workflows and the quality of customer service. Enterprise systems are large-scale software packages which can monitor and manage all of a company's complex operations. These systems are used as a central command center to help simplify the business as well as promote monitoring and decision making.

The following are 10 ways that enterprise systems can benefit the companies that successfully implement them:

1) Store Business Data in a UsableFormat

One of the most critical aspects of enhancing customer service is to have data processed in a manner that can be analyzed easily. As the saying goes, "what is calculated, is handled," and the same is true of business results. Some examples of data which should be stored include the history of customer orders, when and where they made those orders, and how long it took to process those orders. The ability of a business to collect this type of information quickly in order to answer questions from consumers will go a long way towards increasing customer satisfaction.

2) Automate the Customer Service Process for Employees

Using an Enterprise Resource Planning (ERP) program can be a significant help for companies looking to streamline their experience in customer service. ERPs empower organizations to automate their customer service processes, which helps ensure that each employee has a consistent experience for customers and also ensures that back office operations are automated as much as possible. Automation saves time, which can then be used to respond to customer requests for product details and for new product forecasting. When workers spend less time monitoring a customer's order, they may spend more time building long-lasting, successful relationships with customers.

3) Scale Available Resources (Up and Down) as Needed:

One of the better-known advantages of enterprise systems is their ability to scale up or down a company' IT capabilities as required. This means that businesses who need to store additional data or need access to additional computing resources can use cloud, software as a service (SaaS), or an internet-based business network to get the excess capacity instead of having to invest in IT hardware. This also means that the same resources can be scaled down if less IT capabilities are required for some reason. These flexible solutions allow an organization to manage costs while continuing to meet the needs of its customers.

4) Maximize the Reliability of IT Infrastructure Necessary for Customer Service

Their improved flexibility compared to small-scale IT solutions is another advantage for enterprise systems. This ensures that the systems will have more "uptime" and little to no "downtime. "Making sure That systems capture data and work correctly as near as possible to 100 percent of the time is an integral part of a good and reliable customer experience.

5) Secure Customer Data

We've seen a substantially growing number of security breaches in corporate servers in the past few years. Large multinational companies such as Home Depot, Target, Sony, and many others have experienced breaches of their supposedly secure data centers, often at the expense of hundreds of millions, or even billions. The collection of customer data is not only important for a successful customer experience; it is also an essential financial priority.

6) Real-Time Access to Information

Business conditions are constantly evolving, meaning that it's just no longer feasible to wait months for results. Response to knowledge about the activities of a company in real time is a important function of enterprise systems. A high degree of data access enables leadership to analyze and enhance the processes of the organization much more effectively than if they had to wait months for actionable data to be available.

7) Reduce the Cost of Doing Business:

Ultimately, enterprise systems minimize the cost of operating a business, which ensures that a company can have more of its budget free to increase the ability of customer service or invest in other assets that can enhance customer experience. One example is inventory management, because having too much or too little inventory can have a significant impact on the bottom line of a company.

8) Standardized Process

Some of the greatest problems in larger businesses is consistently delivering positive customer service .One of the advantages that robust and real-time data storage, along with the use of ERPs, offers is the opportunity to achieve a far greater degree of standardization of customer service than would otherwise be possible.

9) Improve Supply Chain Management

Enterprise programs can help streamline supply chain management, primarily by using data about where, when, and how consumers position orders and suppliers. This highlights once again the importance of storing business data in a functional format. Ultimately, the ability to streamline the supply chain means that goods are distributed more efficiently to consumers and at a lower cost than otherwise would be possible.

10) Ensure Regulatory Compliance

Regulation has long been a market fact but regulations have become stricter and more implemented over the past few years. Regulations such as the Sarbanes-Oxley Act allow investors to provide comprehensive details on a company's activities, including land, asset and inventory management information. One of the benefits of enterprise management systems is that most of the data provided by those regulations can be obtained by automated means. Enterprise networks can thus be used to ensure compliance with ever more onerous federal legislation without distracting employees from their critical customer service functions.

Benefits and Challenges of Enterprise System

Enterprise systems can incorporate business processes such as sales, financial management, human resource management and inventory management into a single platform which makes it easier for you and your employees to do your job and get access to the key data you need. Find the advantages and drawbacks of corporate business structures so that the small company gets the most benefits.

Benefits:

• Better Productivity and Flexibility

The main benefit of an enterprise system is that it makes the jobs of managers and employees easier. These systems **automate repetitive business processes** so that your staff is more productive. For example, these systems might send sales emails, process employee pay or even place automated inventory orders.

At the same time, these systems **help organize key information** in a place for easy access regardless of location. That means your employees will all have access to the data necessary to do their jobs even if they work from home or do field work.

• Easier Business Planning

Another advantage of enterprise system is that they make business plans simpler and monitor how the organization is achieving its objectives. If you want to track how production goes, control your business expenses or see feedback from customer satisfaction, it's just as simple as looking at an online dashboard grouping this information into simple-to-read tables and maps.

These systems also have **alert capabilities** that can inform you when potential problems occur, such as a spike in product defects or a low inventory.

• Improved Record Keeping and Compliance

Your business will also benefit from the use of corporate systems when it comes to record keeping and enforcement. The data you obtain in enterprise systems is less at risk of loss or theft due to built-in security mechanisms, even though the risk is not zero.

At the same time, the data is of use to some regulatory body when you need proof of the success of your company. Scranton University says that these programs make it easier to meet inventory and asset management criteria of the Sarbanes-Oxley Act.

• Cost Challenges of Enterprise Systems

One of the problems for small business enterprise systems is the implementation expense, which essentially depends on the number of users, the degree of customisation, the form of license (perpetual or subscription) and the required application modules. You may pay recurring licensing fees and maintenance costs, which go beyond the initial license fee, depending on the device you select, and you will even have to purchase new equipment.

Cloud-based business applications typically are initially more affordable. For example, for a cloud-based enterprise program, Software Advice listed an approximate budget of \$87,209 for 21 to 50 users versus \$205,533 for a perpetual license.



Challenges:

Additional Work for Implementation

Another challenge is the extra work you'll have to do to get the company's program ready for full use. You'll probably need to configure the modules for what to do in your company, train your employees on how to use the systems and possibly migrate data from an existing system. Around the same time, you'll have to convince the employees and supervisors to really want to use the program.

Both of these need time to take off certain business activities. If you are still dealing with other demands this can be a challenge.

• Data Loss and Downtime Risk

While enterprise systems come with security and accessibility benefits, there is a downside to relying on a single system for your business's most important processes. If someone from inside or outside the company hacks your system, you risk that person getting **confidential data**. Also, if something in the system fails, your company may experience downtime that leaves workers unable to do their jobs and customers without their needs met. You could even lose key **information** if backups aren't regularly performed.

• Limited ERP Awareness:

There are organizations which have little knowledge of the capabilities of an ERP Program. They lack the know-how and experience to select and execute an effective ERP solution for their company.

However, this can be mitigated by choosing a development partner to implement ERP that can prepare and conduct this complicated affair.

• Misconception:

Myth among SMEs that an ERP program can only be used by large corporations. Because of a high cost of ownership, difficult implementation and other maintenance costs such as training, updating, and frequent upgrades discourage them from implementing an ERP within their companies.

Having said that, an ERP with its streamlined and intuitive functionalities and reports will greatly improve its business capabilities.

• Financial Worries:

Undertakings have a target to follow. The latest items on a company radar are product improvements, enhancements and other projects, as they pursue a tight, fiscal responsible budget.

The design and implementation of an ERP is a expensive affair. It will take months, not years, for the program to be completely integrated with business processes and will take much longer to understand its tangible and intangible benefits.

• Employee Resistance:

Implementing ERP will bring significant organizational change as it incorporates structured workflow and a dynamic working environment. It aims to produce timely reports and to offer realistic pictures and forecasts for future growth and completion of tasks.

In addition, frequent upgrades and daily training on a new program means workers may need to adapt to a new one their current work processes. This is further complicated by improvements to the user interface and cannot locate the functions and functionality in which they used to be accessible.

All of this culminates in certain workers opposing a significant interruption to their current patterns of work. A gradual implementation along with educated training will ensure a smooth transition from old to new ERP framework software.



Summary

Enterprise Resource Planning discussed in Chapter eight. The Introduction includes the ERP and evolution of ERP. The light has been thrown on Enterprise System in large organizations. The benefits and challenges of enterprise system has also been discussed briefly.

Self-Assessment Questions:

What do you understand by ERP?

Discuss the short note on: E- Business, E commerce E- communication and E-collaboration

Page | 101

Chapter 9

E-Enterprise System

OBJECTIVE

After completion of this lesson the student will be able to understand:

9.1 Introduction to Managing the E-enterprise

9.2 Organisation of Business in an E-enterprise

9.3 E-business, E-commerce, E-communication, E-collaboration

9.4 Summary

9.5 Self-Assessment Exercise

Introduction to Basics of ERP

There's an rising abundance of companies going online. Some people are trying to enter a global audience and boost their market share. Others find it a way of streamlining their activities and reducing costs. Make sure you understand the essence of an e-business organization before jumping on the bandwagon.

Definition of Electronic Business

By 2021 the number of digital purchasers is projected to hit 2.1 billion. Around 1.7 billion consumers went shopping online in 2018. Morethan half customers purchased clothing products over the internet in the same year. The best-selling product categories worldwide include electronics, e-books, cosmetics and food.

Keeping this information in mind makes it smart to get the business online. After all, each entrepreneur needs to be a head of the game when it comes to branding, advertising and customer acquisition. Web-only retailers such as eBay and Amazon make up trillions of dollars a year. Amazon for instance had a total income of \$232 billion in 2018.

However, U.S. e-commerce revenues represented more than 10 per cent of all U.S. retail sales in the first quarter of 2019.

An e-business company helps you to expand your reach and market to a worldwide public. The electronic business term, ore-business, is any type of online business transaction. The definition en compasses all forms of digital information sharing electronically to support and optimize business processes, including email marketing, content management systems, payment processing systems and more.

E-Business vs. E-Commerce:

The words "e-business" and "e-commerce" are often used interchangeably, but are not the same. **E-commerce**, which includes the online selling of goods and services, is only one aspect of e- business. It is also limited to cash transactions. As a salesperson, you sell everything consumers need or want.

On the other hand, e-business covers all business processes happening on the Internet. Consequently, it is not confined to monetary transactions. Its primary components include but are not limited to:

- ✓ Enterprise resource management
- ✓ Supply chain management
- ✓ Customer relationship management
- ✓ Business intelligence
- ✓ Online collaboration
- \checkmark Online recruiting and other HR processes
- ✓ E-commerce

The meaning of e-business may seem complex, but it is very clear indeed. Think of the disparity between industry and trade. Trade is a company because doing company is more than merchandising products and services.



E-Commerce Business Models:

The electronic company is a branch of e-commerce. Based on the target market it can be split into many groups. This may include Business-to-Business (B2B), Business-to-Consumer (B2C), Consumer-to-Consumer (C2C) and more.

For example, B2B companies offer goods or services to other businesses. Financial analysts predict global revenues from B2B e- commerce would hit a whopping \$6.7 trillion by 2020. At the other hand, B2C businesses market directly to the end-customer. E- commerce at C2C.

It includes customer-to-customer transactions – think of Craigslist, Facebook Marketplace or eBay (though businesses may also use such platforms).

C2B e-commerce encompasses product and service transactions between customers and organizations. If you are providing business customers with copywriting or web design services on Upwork, that is a C2B example. What these business models all have in common is internet usage. In comparison, e-business includes the use of the internet, intranet and extranet to share information, perform transactions or streamline business processes.



Leverage the Power of Technology-

In this digital age, with a click of a button, consumers can access millions of products and services. You're missing out on future sales if your company isn't online. You can take advantage of the power of digital technology as an entrepreneur to save money, boost efficiency and productivity, streamline employee communication and attract more customers.

For example, an e-commerce store requires less cost than a brick-and- mortar store. There's no need to think about paying rent and utility costs, hiring shop assistant so rob taining zoning permits. Additionally, the goods are available online 24/7, allowing consumers to shop day and night.

Organization of Business in an E-enterprise

E-Commerce : any electronic transaction that takes place when data is stored and distributed online.

E-company : The full range of activities included in a profitable online business. First let's explain some of the definitions. The e- commerce and e-business are two words that seem to cause some confusion. The word e-commerce is becoming the traditional mark for electronic business on the sales side. It requires the introduction of items on websites, and the completion of orders. The vast majority of news and media coverage were focused on online shopping – promoting and selling products and services over the Internet.

You're learning about the vast amount of people shopping on the Internet – how companies can set up websites where they can sell products, perform purchases, get paid and complete orders – you're learning about e-commerce. It is a drastic shift in the way a business responds to its clients and e-commerce is booming. Global spending on e-commerce is at trillions of dollars.

Conversely, e-business refers to the broad range of activities involved in a profitable internetbased enterprise. This involves designing strategies for managing Internet-based businesses that enhance contact between staff, consumers, and suppliers and partnering with partners to manage design and development electronically. And the term E-Enterprise is simply the extension of the principle of e- business to all organizations. E-orgs not only include business companies but also colleges, libraries, government departments, and the military hospitals. Indian railways, for example, is an E-Enterprise because it now provides passengers with access to information and reservations over the Internet.

The easiest way to grasp the idea of E-Enterprise is to look at its three core concepts; the intranet sand extranets. The Internet is a network of interconnected computers worldwide; intranets are the private internet of an organization; and extranets are expanded intranets, open only to selected employees and permitted outsiders. As Example, the degree to which it uses global (Internet) and private (Intranet and Extranet) network links determines an E-Enterprise. Type 'A's are typical companies like independent stores and service businesses.

Many companies fall into that category today. Type 'B's are contemporary organizations that rely heavily on intranets and extranets; Type 'C's are small e-commerce companies; and finally, Type 'D's are complete E-Enterprises with fully integrated global and private networks. Form Ds include companies such as e-Bay, Cisco Systems, Amazon.com, Wal-Mart and others. Notice that it increases the degree to which it takes on e-org property as an entity transitions from Type A towards Type D.

Although numerous stories tell of the sudden rise of E-Enterprise s and the incredible wealth these businesses have generated, readers must remember that many of these organizations have historically been seen as high reward projects. But this really isn't the case. There were those who fell miserably. The Internet created thousands of new businesses; the way they worked changed. And while it has left a lot of road killing, the picture isn't all dark. The use of the Internet by individuals and community members is rising substantially every year. As technology advances and management learns to handle the E- Business better, we should predict its revival.

E – organizations as they concern four management process components: preparing, coordinating, guiding, and regulating. Let's go back to the bigger picture for our purposes here, the impact of technology on a manager's work.

Technology had a positive impact on organizations' internal operations but it also changed the role of the manager. Today organizations are becoming hubs of integrative communication. By connecting computers, telephones, fax machines, copiers, printers and the like administrators, complete information can be obtained easily.

E- Business needs E-Enterprise:

We exist in hard times. Technology makes unprecedented progress which affects all walks of life. New economy and emerging technologies, namely E Commerce, have paved the way for emerging ways of doing business. Businesses are under intense market-place performance pressure and rivals are competing for resources. Although management is continually under pressure to reach new sales goals, it is also under pressure to contribute to the bottom lines and lower costs. E Business came along at the right time to help companies develop new platforms, new markets, fight the competition and cut costs. Companies selling their goods and services and offering online customer support have managed to effectively overcome the competition and take the lead.

Dell is one of those early technology pioneers that took the lead in offering Internet-based
direct sale alternative. Competition is very strong in the computer desktop and laptop market, with all the major names like IBM, Lenovo, HP etc. Owing to the fact that costs are dropping and technology is evolving every few years, the margins are also very small. In such an extremely price sensitive market, there is always an growing incentive to keep costs under control. Dell's brand of direct sales has been a big success right from the moment they started selling online.

Moving into E Business is not a simple process of creating a website and facilitating transactions online. There's more to it than only book orders using the internet and technology. E-Business calls for the construction in the Company of a new business structure which includes the entire Organization. There would have to be convergence forwards and backwards. All business functions within the Organizations will need to be merged and transitioned with smooth integration to Enterprise Technology or ERP platform.

Although order management and financial transaction reconciliation are relevant in terms of e sales, the backend supply chain will have to be prepared within the committed period to handle the entire cycle from manufacturing to delivery to the customer's doorstep. The manufacturing or assembly takes place a tone site, while the customer may be in another country or area. The Organization alone cannot handle such convergence of the production, supply chain and deliveries. It calls for cooperation and collaboration with a range of investors and service providers in the value chain. It also calls for systems, technology, qualified manpower and emphasis to be developed and integrated as well as for management and partnership commitment across all channel partners to ensure seamless flow of knowledge as well as physical goods. In Dell's case, a third-party service provider on behalf of DELL suppliers houses the raw material and product supplies next to the assembly plant.

VMI or Vendor Controlled Inventory ensures that Dell receives raw material supplies at its plant immediately upon request, and that Dell does not own any inventories. When the assembly is complete, the consignment is picked up by a third party service provider, packed at the factory, delivered to the destination after all paperwork and formalities have been complete. At the destination, the agent or other third-party service provider partner picks up the consignment at his door step for further distribution to the customer and eventually uploads the proof of delivery to the tracking website of Dell. Host of service providers are engaged in the chain and systems and processes are relying on to monitor, handle and control the shipments and deliveries at all times. To offer superior delivery service beating competition, the entire E Business Model calls for the establishment and incorporation of

technology as the market engine and the leveraging on technology. Such a business venture calls for a new business model to be developed that is adapted to and operating on the E-Business Model.

E-business, E-commerce, E-communication, E-collaboration

E-Business Basics

In a tech-driven world, it might be tough to tell which businesses are truly e-businesses. Perhaps the best way to understand e-businesses is with the help of examples:

- Email marketing is an e-business practice for current and/or prospective customers; It performs a business process electronically- in this case,marketing.
- Ane-business is a organization that develops and sells an electronic network that monitors inventories and activates warnings at different rates. Inventory management is a corporate activity and is part of the e-business if electronically facilitate.
- Another example of an e-business is a content management system, which handles the workflow between a content creator, writer, manager, and publisher. Under the absence of an automated workflow this process will be performed by the physical movement of paper papers. It becomes an e-business, by activating it electronically
- Online human resources software can be developed by an e- business. Such services include electronic work boards, application servers and employee data collection and retention programs.
- □ Many processes that are described as e-business may be done internally via the network of a company, or it may be something that the company outsources to a vendor that specializes in whatever service is needed. Typical businesses can integrate certain elements of e-business in to their plan by producing the min-house—the two types of business are not mutually exclusive.
- □ Many processes that are described as e-business may be done internally via the network of a company, or it may be something that the company outsources to a vendor that specializes in whatever service is needed. Typical businesses can integrate certain elements of e-business in to their plan by producing the min-house—the two types of business are not mutually exclusive.
- The difference between a traditional company and an e-business is often just a matter

of how business is done. For example, if you're a consulting firm that he lps people pick the right furniture, you're a company, but if your una website where people can compare furniture choices, you're an e-business

E-Commerce Basics:

The concept of e-commerce is simpler as contrasted with e-business. It includes placing orders in its basic form, and making payments online. E-commerce comes in many ways. Through e-commerce enterprise-to-consumer (B2C), a company offers products and services via its website to customers. Most brick-and-mortar retailers have adapted to e-commerce's success, and are now selling via their websites as well as in their shops.

E-commerce sales can cover every aspect of a sale: ordering a product, paying for a product and shipping it. It may also only involve a part of the process. A consumer, for example, may order a product to be picked up at the store online. If the item is picked up, payment may be made online or at the shop. Either way, e-commerce always involved a part of the transaction.

In addition to its own websites, several businesses also sell through virtual marketplaces. A famous brand like Adidas, for instance, can sell shoes from their website, as well as from an online store like Amazon. If you're purchasing it from Nike's website or from Amazon's, the purchase is still an e-commerce example.

Business-to-Business (B2B) E-Commerce

Although the average customer does not know this, much of the worldwide e-commerce includes B2B relationships. This form of e- commerce frequently requires transactions such as the restocking of required products, and very often automation may occur. For example, al and scaping firm may have a contract with an e-commerce company to keep supplied on products such as garden shears, gloves, and fertilizer. The landscaping firm may have an automated process in place to monitor supply rates to maintain performance. If the workers use fertilizer on the yards of the customers, and the inventory fall below a set level, an automated system can order more.

Business to Business (B2B)

Business to Business E-Commerce covers all sorts of electronic transactions of services or goods that happened between two companies or businesses.

□ Consumer to Consumer (C2C)

That kind of E-Commerce involves all online transactions between the consumer and another user of goods or services. It will usually happen with the third party supporting, for example, eBay as an online action marketplace.

Consumer to Business (C2B)

Market to Business is a kind of business model where the end users or consumers produce a product or service that a company uses to complete its business cycle or gain competitive advantage.

For example, sites where freelance designers offer their service for logo creation, and any company is free to use their service if they need it.

Business to Administration (B2A)

Business to Administration or B2A covers any kind of transactions that carry out between business and government with the internet as their medium. It includes a large variety of services, such as social security, fiscal, legal documents, employments, etc.

Consumer to Administration (C2A)

Consumer to Administration includes all kind of transactions that happen between the consumer with the government.

E – Communication (Electronic Communication):

Data sharing is one of the system's most basic specifications. There is so much we need to communicate among different offices and officials. The faster we pass on the details, the faster we get our job done.

We use various means of communication. We used to communicate the issues by post before, later when telephones became widespread, the communication improved a great deal. Then list the inconveniences of mail contact. Should we communicate all official matters by telephone? Create a list of these prons and cons. The contact has reached our fingertips with advancement in Science and Technology. We can interact with everyone in the world who sits in a room with a computer linked to the internet.

Let us try to understand what e-communication is and how useful it is in our

communications.

There are different ways of revealing knowledge, one of which is e- communication. E-mail is an electronic mail service that allows you to exchange messages and information over your machine with other people on the network. Your machine has to be able to send e-mails

- \Box Connected to internet
- Have e-mail software, which is normally part of any internet
- Browser such as Internet explorer and Netscape.

Nowadays e-communication is not a new phenomenon. Almost every office has Internet facilities. You may have used it to share several of your own things or you might have made contacts with your office as well.

E-Collaboration :

As suggested by the concepts provided in the previous section, e- collaboration is a very complex topic and there is a definite need to form e-interaction in virtual teams to avoid confusion and failures. To promote e-collaboration the shaping of e-interaction includes not only technical but also social and psychological issues. This section addresses these problems, useful concepts as well as useful architectures, structures, protocols and standards for the creation and support of e-collaboration. Concepts and Problems for e-Integration Integration tends to have several facets with regard to information technology. Understanding the variations in human experiences is important in order to ensure that correct technologies are used to design and build group ware systems which could effectively facilitate e-collaboration. There are three primary ways in which humans communicate, as described in Wikipedia (2006): conversational interaction, transactional interaction and collaborative interaction

- Conversational interaction is an exchange of information between one or more participants where learning or relationship building is the primary purpose of the interaction. For conversational communications, communication technologies such as telephones, instant messaging, and e-mail are usually appropriate.
- □ Transactional activity includes the exchange of transaction entities where the transaction entity's main purpose is to modify the participant relationship. For permanent storage, transactional interactions are managed most efficiently by transactional structures that maintain state and commit records.

The principal role of the participants' partnership in collaborative relationships is to change a collaborative body. The organization that collaborates is in a fairly unstable state. Examples involve drawing up an concept, making a plan, achieving a common objective. Real communication technologies therefore provide many participants with the functionality of through a specific deliverable. Typical of collaborative technologies are threaded conversations, audit history and other tools designed to collect the efforts of many in a controlled content environment. E-Collaboration research to satisfy the need for collaboration and collaborative work aims to tackle the following main issues: group awareness; multi-user interfaces; competition control; group communication and coordination; shared knowledge space; and support for a heterogeneous, open environment that incorporates current single-user applications.

Biuck-Aghai (2003) refers that two main challenges of e-collaboration are the following:

How does one practically learn how to conduct collaboration?

• How can one know what's going on in virtual cooperation and what's going on? To support sharing, these challenges could be faced by the features of collaborative applications posed by Cerovsek and Turk (2004).

These features are the following:

- Sharing information which includes various types of information to be interpreted by humans.
- □ Knowledge exchange, which is one of the knowledge management system processes apart from knowledge creation, knowledge organization / storage and application of information.
- □ Sharing applications which require sharing code or making available applications: sharing categories are: code, modules, applications, services, computing.
- □ Workspace sharing that offers a virtual space (shared workspace) allocated to the work of the employees (as in the office) and may require the sharing of some of the previous sharing levels Sharing capital.
- Resource sharing involves all the above-mentioned forms of sharing as well as sharing other resources such as computer resources, processing time, equipment etc.
 E-collaboration systems are also classified according to the time / location matrix by

Page | 112

distinguishing between time (synchronous) and time (asynchronous), and position (face-to-face) and position (distributed). Poltrock (2002) introduced another categorization of communication technology, and it is based on the criterion of time interaction, i.e. synchronous and asynchronous.

According to this categorization groupware can be divided into three categories depending on the level of collaboration:

- □ Communication devices that transfer messages, files, data or documents between individuals and thus promote information sharing. Audio / video conferencing, telephone, text chat, instant messaging, and broadcast video are examples of synchronous devices in this group. E-mail, voice mail, and faxes are examples of asynchronous devices in this group.
- Collaboration / conference resources that also promote, but more interactively, the exchange of knowledge. White boards, code sharing, meeting facilitation software, and shared virtual environments are examples of the synchronous technologies through out this group. Examples of asynchronous tools in this category are document management tools, threaded discussions, hypertext, and team workspaces.
- Tools for team management to promote and coordinate community tasks. The floor control and session management are examples of synchronous devices in this group. Workflow management, case tools, project management tools as well as schedule and scheduling tools are examples of asynchronous methods in this group.

Summary

The DBMS (Data base management System) is discussed in tenth chapter. The types of data base users and Designing of DBMS has been clearly discussed.

Self – Assessment Questions

What do you Understand by DBMS?

Discuss the Designing of DBMS?

BLOCK 3-INTRODUCTION

The present block deals in the one unit having three chapters that are as follows. Database management system which includes introduction types designing, second chapter include strategic management information system which deals in introduction of SMIS, product differentiation and value chain, How IT influences Organizational Goals and Governance modes in Use if IT has been elaboratively discussed. Last third chapter of this block and last chapter of the book

CHAPTER 10

DATABASE MANAGEMENT SYSTEMS

OBJECTIVE

Introduction to DBMS Types of Database Users Designing of DBMS

Summary

Self-Assessment Exercise

Introduction to DBMS

A data base management system (DBMS) refers to the database creation and management technology. DBMS is a software method for storing (creating, remembering, modifying, and managing) data in a database.

The main purpose of a DBMS is to provide as impleand effective way to store and retrieve data base information. By data, we mean known facts which can be registered and which have a meaning embedded. People typically use applications such as DBASE IV or V, Microsoft ACCESS or EXCEL to store the data as a database. Adatum is a Data Form. Significant data combined for knowledge to shape. Consequently, data is interpreted in the form of knowledge-data provided with semantics. MS. ACCESS is one of the most common examples of the applications for database management.

More on data, Information, and Knowledge:

Knowledge refers to the use of knowledge as useful. As you know, information can be delivered, processed, and exchanged without any complications or difficulties, but experience cannot be said the same. Knowledge usually requires practical and personal knowledge.

Database systems are designed to accommodate a broad collection of knowledge. Data management involves both identifying information storage systems, and providing tools that can access the information stored. Moreover, given device failures or attempts at unauthorized access, the database system needs to ensure the security of the stored information.

Why Use DBMS:

- To develop software applications In less time.
- Data independence and efficient use of data.
- For uniform data administration.
- For data integrity and security.
- For concurrent access to data, and data recovery from crashes.
- To use user-friendly declarative query language.

Where is a Database Management System (DBMS) being Used:

- Airlines: reservations, schedules ,etc
- Telecom: calls made, customer details, network usage,etc
- Universities: registration, results, grades, etc
- Sales: products, purchases, customers, etc
- Banking: all transaction set χ

Advantages of DBMS

A DBMS manages data and has many benefits. These are:

- Code independence: Application programs should be as free or independent from code representation and storage information as possible. DBMS may provide an abstract view of the data from such facts as to separate application code.
- Effective data access: DBMS competently uses a combination of advanced data management and recovery principles and techniques. In cases where data is stored on external storage devices this function becomes important.
- Data integrity and security: The DBMS can impose data integrity constraints if data is accessed via the DBMS.
- Data administration: Integrating data management will bring major changes when

many users share the data. Experienced practitioners understand the complexity of the data being handled and may be responsible for arranging the representation of the data to minimize duplication and make the data easy to retrieve.

10.1.5 Components of DBMS:

- Users: Users may be of any kind such as DB administrator, System developer, or database users.
- Database application: Database application may be Departmental, Personal, organization's and / or Internal.
- DBMS: Software that allows users to create and manipulate database access
- Database: Collection of logical data as a single unit. Clearly depicted with the picture:



Types of Database Users

Different Types of Database Users in DBMS: This distinction is rendered according to the user's experience with the database. Database frame work is made for storing information and providing an information retrieval environment. There are four types of users in DBMS database.

10.1.1 Types of database:

• Application Programmers

As the name indicates, the computer programmers are the one that uses the software to write computer programmes. These applications are written in programming languages such as COBOL or PL (Programming Language1), Java language, and language of the fourth generation. Such systems meet user requirements and are rendered to user requirements. Such application programs do the collection of information, the production of new information and the modification of existing information.

We interact with DBMS via Calls from DML (Speech for Data Manipulation). And all those functions are done by uploading to the DBMS. If there are no application programmers then the entire Database team wouldn't have imagination.

• End Users

End-users are the ones who control the terminal end folder. They use the existing databases, and have no knowledge of database design and functionality. This are the second consumer class and their main slogan is simply to get their job completed. There are essentially two end user forms which are listed below.

• Casual User

These users are well versed in query language. Casual users access the data by entering different terminal-end queries. They do not write programs but, by writing queries, they can communicate with the framework.

• Naïve

Any consumer who does not have database expertise may be in this group. Their job is to simply use the built application and get the results they want. For example: Clerical workers are a naïve consumer in any bank. They have no knowledge of DBMS but still use the database to carry out their mission.

• DBA (Database Administrator):

DBA can be a single person, or a group of individuals. Database Administrator is responsible for all Database related matters. He's making the plans, tactics and providing technical support.

• System Analyst:

Database analyst is in charge of the database design, configuration, and property. All end-user specifications are dealt with by the system analyst. The principal concern of the program analyst is the viability, economic and technological aspects of DBMS. So, it all concerned Various Database User Styles in DBMS.

Designing of DBMS

For a variety of different sectors, a database management system, generally referred to as the DBMS, is central to business practice. A DBMS is a software program used by businesses to store and collect vast volumes of information for both operational and marketing purposes. Simple access to this information is important as it reduces the time taken for information processing and makes effective use of it by those who need the information.

Phases of Database Design



Requirements

Effective completion of a DBMS allows the programmers and designers to communicate with those involved in the implementation of the system directly to decide how it is to be used. This will play a key role in deciding the programming essence and the manner in which data is processed and retrieved. The types of data used will need to be taken into consideration, as will the storage limitations and any other types of constraints or requirements that the programmers will have to meet. A simple client database, for example, acts as an application for data processing and reporting while other types, such as a database for medical records, may use more complex relationships to identify data. The relation between data is described in these types of models by common characteristics or core values.

Models

If you have an understanding of how the database should be used, and any constraints and requirements that need to be adhered to, then you can start creating a plan for data management and recovery. Different model sexist to build a DBMS, so you'll need to consult programmers to decide which model best fits the company's needs. The model that you are using will dictate the logic the device uses to store and retrieve information. Logic is the sequence of steps that the database is going through to manage the information; it is the DBMS 'if, then' function. Databases using a network model, for example, allow the user to access data using several paths or connections, while a hierarchical model is less versatile and defines data in terms of simple relations. The model you choose, it needs to be simple for users to understand and it needs to be versatile enough for you to later modify it or adapt it to new systems.

For a variety of different sectors, a database management system, generally referred to as the DBMS, is central to business practice. A DBMS is a software program used by businesses to store and collect vast volumes of information for both operational and marketing purposes.

Simple access to this information is important as it reduces the time taken for information processing and makes effective use of it by those who need the information.

Requirements

Effective completion of a DBMS allows the programmers and designers to communicate with those involved in the implementation of the system directly to decide how it is to be used. This will play a key role in deciding the programming essence and the manner in which data is processed and retrieved. The types of data used will need to be taken into consideration, as will the storage limitations and any other types of constraints or requirements that the programmers will have to meet. Effective completion of a DBMS allows the programmers and designers to communicate with those involved in the implementation of the system directly to decide how it is to be used. This will play a key role in deciding the programming essence and the manner in which data is processed and retrieved. The types of data used will need to be taken into consideration, as will the storage designers to be used. This will play a key role in deciding the programming essence and the manner in which data is processed and retrieved. The types of data used will need to be taken into consideration, as will the storage

limitations and any other types of constraints or requirements that the programmers will have to meet.

Models

Once you have an idea of how the database will be used and any limitations and specifications that need to be adhered to, you can then begin developing a data storage and retrieval model. Various models exist for the creation of a DBMS, so you will need to consult with programmers to determine which model best suits the needs of your company. The model you use will determine the logic used by the system to store and retrieve information. Logic is the sequence of steps the database goes through to handle the information; it is the "if, then" function of the DBMS. For instance, databases utilizing a network model allow the user to access data using several paths or relationships, where as a hierarchical model is less flexible and defines data in terms of simple relationships. Whichever model you choose, it needs to be simple to understand for users, and it needs to be flexible enough that you can change it or adapt it to new systems later on. A simple client database, for example, acts as an application for data processing and reporting while other types, such as a database for medical records, may use more complex relationships to identify data. The relation between data is described in these types of models by common characteristics or core values.

Implementation

Implementation of the database system can take place once the model you wish to use has been adopted. The most time-consuming component of your DBMS development process may be the database implementation process. Implementing your model involves designing your data tables based on the rationale you have chosen to use. The data must either be entered by hand or imported into the database. Data that contain text content, such as names and addresses, but may also contain images, graphics, and sound. Using the correct commands, you must build and populate the data tables, and then determine the rules and relationships necessary to decide how your data will be retrieved. A relationship is the attribute or defining value that defines how the data is accessed. For example, a nurse or physician may enter a list of symptoms or disorders in a medical database, which then causes the database to update a list of data that contains several potential diagnoses and treatments. Changing a symptom or adding a new variable will alter the list of possible remedies and causes. The more complicated the logic, the more sophisticated the applications could be.

Troubleshooting

When the program is completely developed and ready to be implemented, you will need to run it through a series of tests to ensure it conforms to your particular specifications. It is more than anything else a matter of trial and error, but it can be achieved with some consistency if you actually create a list of things that you would like to check while the data tables are being placed together.

Summary

Strategic Management Information System is the eleventh chapter in the MIS book. The introduction of Strategic MIS leads to the product differentiation and value chain. The influence of IT on organization goals has also been vividly discussed with the special reference to the Governance Modes in the Use of IT.

Self-Assessment Questions

What do you understand by Strategic Management Information System?

What are the Governance Modes in the Use of IT?

References:

- <u>https://www.economicsdiscussion.net/management/management-information-</u> system/management-information-system/32411
- <u>https://www.tutorialspoint.com/management_information_system/management_information_</u>
 <u>system.htm</u>
- <u>https://ebooks.lpude.in/management/mba/term_4/DMGT505_MANAGEMENT_INFORMA</u>
 <u>TION_SYSTEM.pdf</u>
- <u>https://examupdates.in/mba-management-information-systems/</u>
- <u>https://www.shopify.com/encyclopedia/management-information-systems-</u> mis#:~:text=A%20management%20information%20system%20(MIS,aid%20in%20manage ment%20decision%2Dmaking.
- <u>https://mays.tamu.edu/department-of-information-and-operations-management/management-information-systems/</u>





Contact Us: University Campus Address:

Jayoti Vidyapeeth Women's University

Vadaant Gyan Valley, Village-Jharna, Mahala Jobner Link Road, Jaipur Ajmer Express Way, NH-8, Jaipur- 303122, Rajasthan (INDIA) (Only Speed Post is Received at University Campus Address, No. any Courier Facility is available at Campus Address)

Pages : 122 Book Price :₹150/-



Year & Month of Publication- 3/3/2021