UNIT-2

2019 FEBRUARY

* EVOLUTION OF INFORMATION SYSTEM

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What is IS? ⇐ An information system is a combination of processes, hardware, trained personnel, software infrastructure and standards that are designed to create, modify, store, manage, and distribute information to suggest new business strategies and new products. It leads to efficient work practices and effective communication to make better decisions in an organization. There has been a significant evolution of information system function over the past few decades.

The evolution of information System can be summarized as follows:-

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1) 1950 - 1960 (Electronic Data Processing, Transaction Processing System)

During this period, the role of IS (info. System) was mostly to perform activities like transaction processing, recordkeeping and accounting. IS was mainly used for electronic data processing (EDP).

EDP is described as the use of computers in recording, classifying, manipulating, and summarizing data. It is also called information processing or automatic data processing.

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Transaction Processing System (TPS) was the first computerized system developed to process business data. TPS was mainly aimed at clerical staff of an organisation. The early TPS used batch processing data which was accumulated over a period and all transactions were processed afterward.

TPS collects, stores, modifies and retrieves day-to-day transactions of an organization. Usually, TPS computerize or automate an existing manual process to allow for faster processing, improved customer service and reduced clerical costs.

Examples of outputs from TPS are cash deposits, automatic teller machine (ATM), payment order and accounting systems. TPS is also known as transaction processing or real-time processing.

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2) 1960 - 1970 (Management Information Systems)

During this era, the role of IS evolved from TPS to MIS. MIS process data into useful informative reports and provide managers with the tools to organize evaluate and efficiently manage departments within an organization. MIS delivers information in the form of displays and pre-specified reports to support business decision-making. Examples of output from

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MIS are cost trend, sales analysis and production performance reporting systems.

Usually, MIS generates three basic types of information which are :-

- Detailed information reports typically confirm transaction processing activities? A detailed Order Report is an example of a detailed report.
- Summary information establishes data into a format that an individual can review quickly and easily.
- Exception information report information by filtering data that is an exception inventory report.

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Exception reports help managers save time because they do not have to search through a detailed report for exceptions.

3) 1970 - 1980 : (Decision Support System)-

In this era, a major advancement was an introduction of the personal computers (PC). With the introduction of PCs, there was the distribution of computing or processing power across the organisation. IS function associated strongly with management rather than a technical approach in an organisation.

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The role focused on "interacting computer-based system" to aid decision-makers in solving problems. This new role of information systems (IS) to provide interactive ad-hoc support for the decision-making process to managers and other business professionals is called Decision Support Systems (DSS). DSS serve the planning, management and operations at level of an organization usually senior management. DSS uses data from both internal and/or external sources. Internal sources of data might include inventory, sales, manufacturing or financial data from an organization's database.

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External sources could include pricing, interest rates, population or trends. Managers use DSS to manipulate the data to help with decisions. Examples of DSS are projected revenue figures based on new product sales assumptions, product pricing and risk analysis system.

4) 1980 - to - 1990: Executive Information Systems

This period gave rise to departmental computing due to many organisations purchasing their own hardware and software to suit their departmental needs. Instead of waiting for indirect support

of centralized corporate service department, employees could use their own resources to support their job requirements. This trend led to new challenges of data incompatibility, integrity and connectivity across different departments. Further, top executives were neither using DSS nor MIS hence executive information systems (EIS) or executive support systems (ESS) were developed.

EIS offers decision making facilities to executives through providing both internal and external information relevant to meeting the strategic goals of the organization. These are sometimes considered as a specific form of DSS. Examples of the EIS are systems for easy access to actions of all competitors, economic developments to support strategic planning and analysis of business performance.

5) 1990 - 2000 : Knowledge Management Systems

During this era, the rapid growth of the intranets, extranets, internet and other interconnected global networks dramatically changed the capabilities of IS in business. It became possible to circulate knowledge to different parts of the world irrespective of time and space.

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This period also saw an emergence of enterprise resource planning (ERP) systems. ERP is an organization-specific form of a strategic information system that incorporates all components of an organization including manufacturing, sales, resource management, human resource planning and marketing.

Moreover, there was a breakthrough in the development and application of artificial intelligence (AI) techniques to business information systems. Expert systems (ES) and knowledge management systems (KMS) interconnected to each other.

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Expert systems (ES) are a computer system that mimics the decision-making ability of human experts. For example, systems making financial forecasts, diagnosing human illnesses and scheduling routes for delivery vehicles. Knowledge management system (KMS) is an IT system that stores and retrieves knowledge to support creation, organization and dissemination of business knowledge within the enterprise. Examples of KMS are feedback database and help-desk systems.

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ES uses data from Knowledge Management Systems to generate desirable information system's output - for example

loan application approval system. FRIDAY Week - 11 | 15

6) 2000 - Present :- E-Business

The internet & related technologies and applications changed the way business operate and people work. Information systems functions in this period are still the same just like 50 years ago doing records keeping, reporting management, transactions processing, support management and managing processes of the organization. It is used to support business process, decision making and competitive advantage.

The difference is greater connectivity across similar and dissimilar system components. There is great network SATURDAY Week - 11 | 16 infrastructure, higher level of integration of functions across applications and powerful machines with higher storage capacity. Many businesses use internet technologies and web-enable business processes to create innovative e-business applications. E-business is simply conducting business process using the internet.

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* Decision-Making & MIS

Concept of decision-making :-

Decision-making is a process that results in the selection of a course of action among several alternative scenarios.

Decision-making is a daily activity for any human being. There is no exception about that. When it comes to business organizations, decision-making is a habit and a process as well.

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Effective & successful decisions result in profits, while unsuccessful ones cause losses. Therefore, corporate decision-making is the most critical process in any organization.

In a decision-making process, we choose one course of action from a few possible alternatives. In the process of decision-making, we may use many tools techniques and perceptions. In addition, we may make our own private decisions or may prefer a collective decision. Usually, decision-making is hard. Majority of corporate decisions involve some level of dissatisfaction or conflict with another party.

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M1 Decision-Making Process :—

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Following are the important steps of the decision-making process. Each step may be supported by different tools and techniques.

(i) Identification of the purpose of the decision —

In this step, the problem is thoroughly analyzed by asking the following questions

- What exactly is the problem?
- Why the problem should be solved?
- Who are the affected parties of the problem?
- Does the problem have a deadline or a specific time-line?

(ii) Information gathering :—

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A problem of an organization will have many stakeholders. In addition, there can be dozens of factors involved and affected by the problem.

In the process of solving the problem you will have to gather as much as information related to the factors and stakeholders involved in the problem. For the process of information gathering, tools such as 'check sheets' can be effectively used.

(iii) Principles for judging the alternatives :—

In this step, the baseline criteria for judging the alternatives should be set up. When it comes to defining the criteria, organizational goals as well as the corporate culture

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should be taken into consideration. As an example, profit is one of the main concerns in every decision making process. Companies usually do not make decisions that reduce profits, unless it is an exceptional case. Likewise baseline principles should be identified related to the problem in hand.

Step (iv) — Brainstorm & Analyze the Choices

For this step, brainstorming to list down all the ideas in the best option. Before the idea generation step, it is vital to understand the causes

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of the problem and prioritization of cause.

For this, you can make use of Cause-and-effect diagrams and Pareto Chart tool. Cause-and-effect diagrams help you to identify all possible causes of the problem and Pareto chart helps you to prioritize and identify the causes with the highest effect.

Then, you can move on generating all possible solutions (alternatives) for the problem in hand.

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Step-V — Evaluation of Alternatives

Use your judgment principles and decision-making criteria to evaluate each alternative. In this

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step, experience and effectiveness of the judgment principles come into play. You need to compare each alternative for their positives and negatives.

Step VI (6) — Select the Best Alternative —

Once you go through from step 1 to step 5, this step is easy. In addition, the selection of the best alternative is an informed decision since you have already followed a methodology to derive and select the best alternative.

Step 7 — Execute the decision —

Convert your decision into a plan or a sequence of activities. Execute your plan by yourself or with the help of subordinates.

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Step 8 — Evaluate the Results —

Evaluate the outcome of your decision. See whether there is anything you should learn and then correct in future decision making. This is one of the best practices that will improve your decision-making skills.

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* Concepts of Balanced MIS effectiveness and efficiency criteria

Efficiency and effectiveness are both commonly used management terms.

(i) Efficiency refers to doing things in a right manner. It is defined as the output to input ratio and focuses on getting the maximum output with minimum resources.

Effectiveness, on the other hand, refers to doing the right things. It constantly measures if the actual output meets the desired output.

Since efficiency is all about focusing on the process, importance is given to the 'means' of doing things whereas effectiveness focuses on achieving the 'end' goal.

(ii) Efficiency is concerned with the present state or the 'status quo'. Thinking about the future and adding or deleting any resources might disturb the current state of efficiency.

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Effectiveness, on the other hand, believes in meeting the end goal and therefore takes into consideration ahey variables that may change in the future.

(iii) To be efficient time & again, discipline is required. This can build inflexibility into the system.
Effectiveness, on the other hand, keeps the long term strategy in mind and is thus more adaptable to the changing environment.

(iv) Since efficiency is about doing things right, it demands documentation and repetition of the same steps. Doing the same thing again and again in the same manner will certainly discourage innovation.

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On the other hand, effectiveness encourages innovation as it demands people to think, the different ways they can meet the desired goal.

(v) Efficiency will look at avoiding mistakes or errors whereas effectiveness is about gaining success.

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In the earlier days of mass production, efficiency was the most important performance indicator for any organization. However, with consumers facing an increasing number of choices, effectiveness of an organization is always questioned. In order to be a successful organization, there needs to be a balance between effectiveness and efficiency. Only being efficient and not meeting the requirements of the stakeholders of the organisation is of little use to anybody.

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SUMMARY.

(1) Efficiency means doing the things right whereas effectiveness is about doing the right things.

(2) Efficiency focuses on the process or 'means' whereas effectiveness focuses on the end.

(3) Efficiency is restricted to the present state whereas effectiveness involves thinking long term.

(4) Organizations have to be both effective and efficient in order to be successful.

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