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Human Resource Information Systems

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MBA - HRM

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UNIT - I

Unit Structure

Lesson 1.1 - Introduction to HRIS

Lesson 1.1 - Introduction to HRIS

Learning Objectives

After reading this chapter, you should be able to understand

- The meaning and definition of HRIS
- The importance of HRIS
- Data and information needs for HR manager
- Sources of data
- Concept structure and mechanics of data
- Survey of software packages for HRIS
- Basic knowledge of ERP software such as SAP, Oracles Financials and Ramco's Marshal

Introduction

Social and organizational changes in the economic environment are numerous and extensive. According to that, it is important for human resource management (HRM) to be comprehensive, high in quality, fast, flexible and in line with upcoming trends, because it is one of the parameters of successful business. Use of ICT (information and communication technology) becomes an imperative for HRM, as well as the other activities in the company. Enterprise Resource Planning (ERP) is very widely applied in HR departments. For instance, company can track employment's life cycle or engagement of the new labor. These changes can be viewed as transactional data, because employment of workers begin and end within the organizational structure of one company. As a result of that, HRM with its data is ideal for traditional ERP infrastructure, thus it has found the appropriate support in ERP systems. However, modern Knowledge economy and labor statistics impose the need for consistent

initiatives in real time, so HRM department must implement these initiatives before the actual employment of workers. For these reasons, HRIS systems separate from standard ERP solutions and become stand-alone platforms with wider range of options, such as adjustable employment statistics for each enterprise. Let us have a brief introduction of evolution of Human Resources Technology prior to know more about HRIS.

Data and Information Needs for HR Manager

The "Data" is considered as "Raw Facts" and "Information- processed data output". Human resources metrics, or tracking employee and employer data, is the key to effective HR management. Many forms of data are required by law to be maintained by employers, while other data is helpful to delivering efficient services to employees and determining HR staffers' abilities to meet the needs of the workforce. These days, human resources departments are collecting and storing vast amounts of employee-related data. From turnover rates and workforce characteristics to payroll and employment history, never before have HR Manager had such unfettered access to personal information. These bits and bytes can help hire new talent, identify skills gaps and measure performance. They also create a whole new set of challenges for HR managers: how to comply with global employment laws, maintain data security and uphold employee privacy.

The HR department collects data such as:

- Hiring statistics (acceptance rate, hiring rate, hiring projections)
- Turnover
- Compensation and benefits philosophy and practice
- Exit interview summaries
- Employee complaints (discrimination, harassment, safety, other)
- Promotion and advancement practices and trends
- Human Resources budget and expenditures

The usage of data and its information are discussed below:

- **Employee Count**

The employee base, or the number of workers employed, is critical data for HR to track. Everything from the ratio of HR staffers to employees to the organization's ability to negotiate group health insurance rates depends on the number of employees. For example, HR best practices suggest a ratio of one full-time HR staffer for every 100 employees.

Companies in their growth stages should track employee base numbers to determine how many HR staffers they should hire.

- **Voluntary EEO (Equal Employment Opportunity)**

Government contractors are required to track applicant and employee data such as race, age, sex, disability and veteran status to use when analyzing their companies' diversity representation. Applicants and employees voluntarily provide this information; however, some organizations report the data based on observation. HR tracks this data to demonstrate equal employment opportunity practices and to determine if the company should embark upon specific outreach measures to attract a diverse pool of qualified applicants.

- **Wages**

HR should track current and historical compensation data. Current salaries and wages are obviously tracked for accurate payroll processing; however, tracking historical data on the company's wages is equally important. Historical compensation data is essential for record keeping purposes, such as the company being required to justify wage-setting practices or investigation by the Government for minimum wage and overtime pay practices. Compensation data also is important for conducting wage surveys and comparison to similar businesses to determine if the company is paying competitive wages.

- **Training Expense**

Tracking data concerning employee training can assist in illustrating the return on investment in employees' professional development. A return on investment can be measured by the number of employees who take advantage of professional development opportunities versus the number who apply what they've learned to their current jobs or use the training to advance within the company. Many organizations track this data according to the average amount expended per employee or the aggregate amount for the HR department's fiscal year spending. Data related to training expense also is useful in determining whether to conduct in-house training to outsource it.

- **Recruitment and Retention**

Recruitment data may include applicant counts, number of interviews granted and hiring process outcomes for measuring the effectiveness of the company's recruitment and selection methods. Cost-per-hire metrics require this data and, in some cases, analyzing

selection data can determine whether hiring managers are conducting appropriate and effective interviews. Retention data, as in the number of employees who stay with the company, and turnover data are valuable data for calculating cost per hire as well.

Sources of Data

HR Department has 3 sources of data collection in general:

1. Analytical data from various departments (e.g. Finance, Marketing etc.)
2. By survey methods.
3. From external sources (e.g. Outsourcing the data collection or from external data warehouses).

Role of IT in HRM

Technology in Human Resource (HR) management is another application of companies using hardware and software to aid human activities. Companies use all types of technology in human resource management. A few different roles for the technology can be hiring and selecting employees for interviews, managing employee paperwork or benefits, and securing sensitive employee files. Many different types of hardware or software are available for this purpose. Companies can either use an external software package or create their own, depending on their needs.

Many companies now use Internet-based employee applications or other technology in human resource management for finding new employees. A significant benefit for online applications is the existence of knockout questions. These questions prevent unqualified individuals from making it too far through the employee application process. For example, if a company desires a certain level of education, an answer about earned college degrees may appear on employee applications. Those who answer "no" to the question will not be included on the list of potential interviews for a company's open job position. Employee paperwork for new and existing hires is often a time-consuming process. Technology in human resource management allows a company to find new ways of handling paperwork relating to employee hires and benefits. For example, all new hires may need to fill out paperwork for medical, dental, retirement, or other benefits. The use of an online enrollment system is common and beneficial. A company can create an intranet that all employees can access in order to fill out documents, review current benefits, or handle other tasks related to specific benefits. Companies must have secure environments for storing employee documents. While all companies typically have specific storage rooms devoted to this purpose, technology in human resource management can also be beneficial.

Here, encrypted spreadsheets or other software packages allow companies to restrict access to payroll or other sensitive documents. The use of outside payroll services may result in a company using an external website for transferring sensitive documents. Technology often helps a company prevent theft from payroll documents through comprised transfer methods. Technology in human resource methods is not without its drawbacks. Moving traditional activities from a manual to technological process can be time-consuming and expensive. Additionally, the potential for hardware or software to fail is also a problem that a company may need to consider. Being prepared for all technological issues is a must as failure to properly handle employee data can result in heavy fines or penalties.

IT for HR Managers

Human resource managers began to see the possibility of new applications for the computer. The idea was to integrate many of the different human resource functions. Everything nowadays is becoming computerized and especially when it comes to human resource information systems the HR manager has to be aware about the system well at least for the sake of minor things like payroll, compensation, etc. So information technology plays a vital role for any department & especially HR Department in any organization. These days HR Managers use third generation of HRIS. Third generation of the computerized HRIS is a feature-rich, broad-based, self-contained HRIS.

The third generation took systems far beyond being mere data repositories and created tools with which human resource professionals could do much more (Byars, 2004). Many companies have seen a need to transform the way Human Resource operations are performed in order to keep up with new technology and increasing numbers of employees. In the past recording keeping was done on paper and with spreadsheets. Mangers realized that there was a need to change to a more computerized system and looked into the use of IT. By making the move to IT based HR function they became able to keep more accurate records as well as better prepare for future growth. Later with the use of Web-based technology programs e.g. electronic pay stub, electronic timesheet software, time-off system, and human resource information system was able to reduce waste and cost. It also helped the IT managers to provide more reaches to employees in empathetic way.

Concept, Structure, and Mechanics of Human Resource Information Systems (HRIS)

Human resources information systems: concept

"HRIS can be briefly defined as integrated systems used to gather, store and analyze information regarding an organization's human resources." (Hedrickson, 2003, p.381)

HRIS "One which is used to acquire, store, manipulate, analyze, retrieve and distribute information about an organization's human resources." (Tannenbaum 1990)

Human resources management systems (HRMS) or human resources information systems (HRIS) can be defined as integrated systems used to gather, store, and analyze information regarding an organization's human resources. Using HRIS technology can help HR automate and simplify tasks, reduce administration and recordkeeping, and provide management with HR-related information when required.

These systems provide a repository for information/data to be stored and maintained, and they possess varying degrees of reporting capability. However, for the data to be useful, they need to be transformed into information that is meaningful to managers. This is the challenge facing HR departments today and what will ultimately determine whether HR is able to deliver strategic HR services. Integrated HR Information Systems (HRIS) have a profound effect on firms that implement them.

Most often these firms are replacing several related systems, such as a personnel database, payroll system and benefits system, with one HRIS that does it all. Many people focus on the improved reporting and processing that will be realized from the new system, and those are the reasons most firms choose to implement a new HRIS. But what many people don't focus on is that the new HRIS will most likely affect the company much more deeply– it will challenge the operating structure and principles of all the HR-related departments. An integrated HRIS results is a drastically different environment than a cluster of related but separate systems. The core concept of a centralized data store inherent with an HRIS demands integrated work processes for consistently managing that store. The two attributes – centralized data storage and integrated work processes – will affect the company in ways most managers don't expect.

HRIS Structure

HRIS is the composite of databases, computer applications, and hardware and software necessary to collect, record, store, manage, deliver, manipulate, and present data for human resources. It is important to note that the term "systems" does not just refer to hardware and software. Systems also include the people, policies, procedures, and data required to manage the HR function. In reality, computer technology is not the key to being successful at managing human resource information, but what it does do well is provide a powerful tool for "operationalizing" the information—making it easier to obtain and disseminate and ensuring that it is specific to the organization's HR policies and practices. A sound HRIS must allow for the assimilation and integration of HR policies and procedures

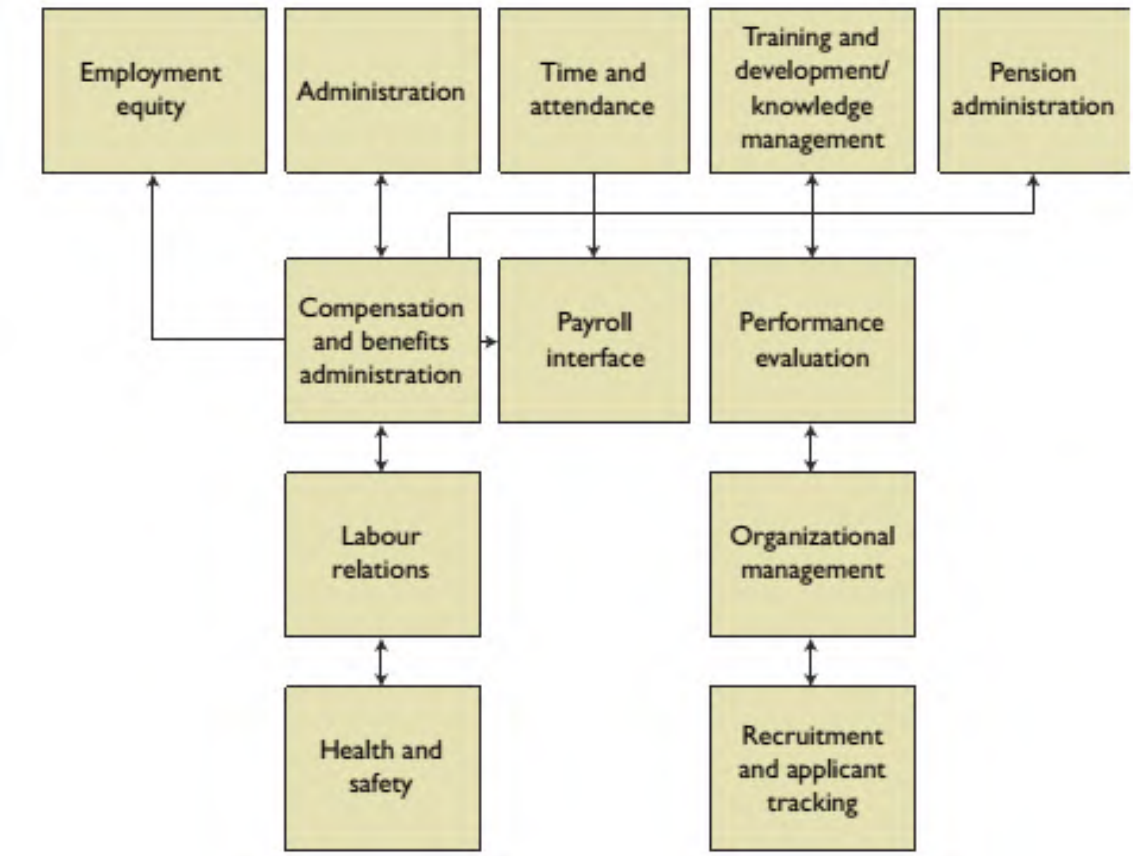
with an organization's computer hardware and its software applications.

For example, a simple business rule (e.g., promotions are not to exceed 8 percent of salary) could easily be programmed into the system, and errors could be flagged when they occur.

Let's now look at important HRIS subsystems and the types of data that can be resident in these systems.

HRIS Subsystems

There are several different components, called subsystems,that compose an HRIS. They are employee administration, recruitment, time and attendance, training and development, pension administration, employment equity, performance evaluation, compensation and benefits administration, organizational management, health and safety, labor relations, and payroll interface, and as shown in Figure



HRIS Subsets

Employee Administration

A basic component of an HRIS system is its administrative function. The typical information you would find in an HRIS system for each employee would include hire date, name, address, telephone, e-mail address, birth date, sex, salary, emergency contact information, department code, location, employment status (full-time, part-time, or contract), the start date of each position held, position titles, and benefit information.

Recruitment

This subsystem includes information on the position name and number, the department in which the position resides, whether the position has been approved, and whether the position is full-time or part-time. In some cases, online forms will be available so that applicants can be tracked and résumés can be scanned for key words to identify skills and experience.

Time and Attendance

This subsystem includes the information necessary to calculate vacation time, such as hire date, any leaves of absences (paid or unpaid), termination date if applicable, and any other events that interrupted service. In addition, the company's policy details, such as "use it or lose it," might be programmed into the system. If there are any special rules, then this information is programmed into the system. For example, employees often continue to accumulate vacation on some type of leaves. Other data in this subsystem often include the number of days an employee was absent, leaves of absence, whether these leaves were sabbatical leave, personal leave, or maternity/paternity/paternal/adoption leaves, and the dates the employee started and ended each leave. Policy details would also be programmed

Training and Development

This subsystem includes data on an employee's skills and competencies, training courses taken, costs of courses, developmental activities, and career planning in terms of which positions might be most appropriate for an employee based on skills and competencies.

Pension Administration

Information as to the design of the plan is found in this subsystem. In addition, employee contributions and company contributions for each employee would be included.

Employment Equity

Organizations that are subject to employment equity legislation could include information on the number of employees in the four designated groups (women, Aboriginals, visible minorities, and people with disabilities), type of industry, and geographic region in this subsystem in order to provide the information required by the legislation.

Performance Evaluation

This subsystem includes information regarding performance ratings, the date these ratings were received, the type of appraisals that were used, comments about the appraisal, and performance objectives and goals

Compensation and Benefits Administration

Information regarding the company's compensation and benefits plans and the policies relating to these plans are found in this subsystem.

For example, policies on the type of increases allowable when an employee receives a promotion, data regarding pay grades and ranges for each position, positions that are entitled to a bonus and bonus structure could be included. In addition, information regarding the type of benefits plans, whether there is a cost-sharing arrangement, and what that arrangement would be if an employee took an unpaid leave would also be available in this subsystem.

Organizational Management

This subsystem includes the organizational structure and job descriptions. It may have a field to enter the National Occupational Classification (NOC) codes; described in the next chapter). It may also link positions/jobs to specific workers.

Health and Safety

Accidents happen at work and organizations are responsible for reporting these accidents to the Workers' Compensation Board (or equivalent) in their jurisdiction. Data on the number of accidents, types of accidents, health and safety complaints, resolutions, Workers' Compensation claims, and related forms may be included in this subsystem.

Labor Relations

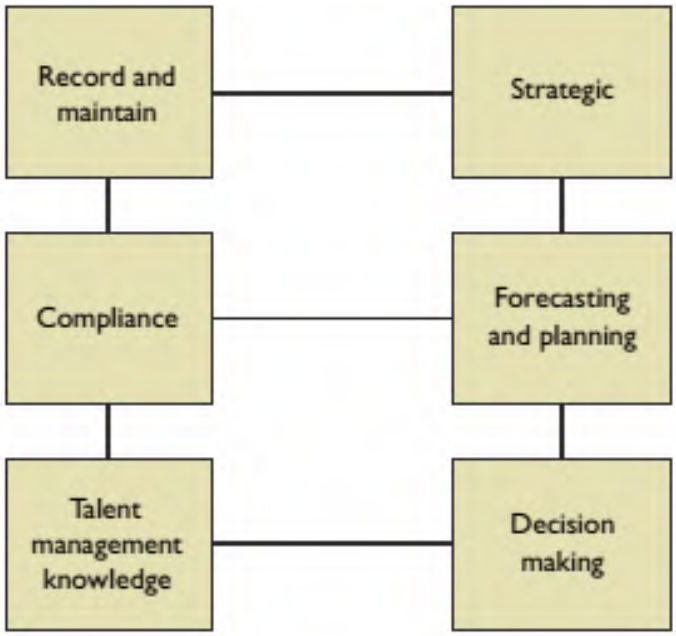
Such information as seniority lists, union membership, grievances, and resolutions of grievances can be found in this subsystem.

Payroll Interface

This subsystem has information on salary, wages, and benefits to make it easier to interface with accounting (payroll). Most HRIS systems today have a payroll component, and the more sophisticated systems have an ability to directly interface with payroll providers.

Key Mechanisms of an HRIS

The HRIS is made up of a number of subsystems, and data can be stored, maintained, and generated from the system. These data can be used to create information that will serve different purposes for many different stakeholders. The key functions of an HRIS are shown in Figure.



Key Mechanism of an HRIS

The HRIS can do the following:

1. Create and maintain employee records
2. Ensure legal compliance
3. Enable managers to forecast and plan future HR requirements

4. Provide information to managers and HR so they can manage knowledge and manage talent (career and succession planning)
5. Provide information to enable HR plans and activities to align more effectively with the organization's strategic plan
6. Assist managers with decision making by providing relevant data so they can make more effective and informed decisions

Create and Maintain Employee Records

The data being entered create an employee record and this record is maintained throughout employment. In most organizations the HRIS administrator is responsible for creating (entering the information into the system) and maintaining these records. Accuracy and timeliness are critical. For example, if an employee recently received a promotion and salary increase, this information would need to be entered into the system. Over time, managers, employees, and human resource professionals will all need to access employee records.

Compliance

Data entered into the HRIS can be used to help the organization comply with government regulations in an accurate and timely fashion. Ensuring data integrity and accuracy is very important and a key responsibility of the HR professional. For example, organizations that are subject to employment equity legislation are required to file an annual report. If the data required to produce the necessary information have been recorded and maintained appropriately, these reports can be generated with ease. Some organizations have software that interfaces directly with the Employment Equity Computerized Reporting System (EECRS) software provided by the federal government, resulting in the information from the HRIS being downloaded directly into the required reporting system. In addition to employment equity, payroll is another example of a function with a multitude of compliance responsibilities, such as the generation of an employee's detail information.

HR Planning and Forecasting

Information from the recruitment, training and development, and administrative subsystems, such as number of open positions, types of positions, employee skills and competencies, job rates (salaries), retirement eligibility, and employee turnover rates, can be used to help managers develop long-range staffing plans and provide valuable information to HR professionals.

Talent Management/Knowledge Management

The data that are entered into the system, such as skills, competencies, jobs held, training, and employee development interests, can be used to help managers provide development opportunities for their employees, ensure that the appropriate employees are offered positions that will enhance their skills, provide the appropriate training for employees so they can advance in the organization, and highlight an employee's interests and development paths. This information will help HR professionals to provide more targeted advice and counsel to managers and help HR to work more effectively with employees and managers to create a development plan that meets organizational and employee needs.

Strategic Alignment

Information from the system can help organizations align HR activities more effectively with their strategic plan. For example, if the organization's plan was to enter into a new market and it required a certain number of certain types of employees (say, five accountants), the data from the system can tell management whether it has these employees, and if not, when they are expected to be hired.

Decision Making

The ability to extract data from the HRIS and use these data not just to create information but also to improve the quality of management decisions has become increasingly important. HRIS can access a data warehouse, or central repository for all the data collected by an organization's business systems.

For example, managers are often asked to recommend an appropriate budget for salary increases. In order to make a "quality" decision, managers might need to confirm the current salaries of their employees, look at the past history of salary increases, review the company policies, and review their employees' performance history. To make a more informed decision, the information needs to be relevant, useful, timely, and accurate.

Some of the most commonly requested reports from the HRIS include

- Basic information, such as name, address, phone number
- Compensation reports, such as salary history
- Performance evaluations
- Leaves of absence, paid or unpaid

- Number of jobs held and position titles
- Number of vacation days taken and number outstanding
- Types of training taken and skills acquired

In addition to these reports, managers utilize the system to perform HR calculations. The Saratoga Institute has identified a list of the most common calculations requested by managers: health-care cost per employee, pay and benefits as a percentage of operating expenses, cost per hire, return on training, volunteer turnover rate, turnover cost, and time to fill jobs, and return on investment in human capital.

Another use of HRIS data is for making decisions regarding the effectiveness of the organization's human resources. Workforce analytics refers to the use of HRIS data to assess the performance of an organization's workforce by using statistics and research design techniques. Workforce analytics attempts to analyze factors contributing to effective HR contribution to the achievement of strategic goals.

The ability for HR to use data analytically to aid managers in effective decision making has transformed HR into a "decision science" and enabled it to demonstrate that effective HR management can have a significant and measurable impact on a company's bottom line. Figure summarizes the main user groups for the HRIS and the key information provided to each group.

	Employee	Manager	HR
Record and maintain		✓	✓
Compliance			✓
Forecasting and planning		✓	✓
Talent management	✓	✓	✓
Strategic		✓	✓
Decision making	✓	✓	✓

HRIS Users

Survey of Software Packages For Human Resource Information Systems Including ERP Software Such as SAP, Oracle Financials and Ramco Marshall

The ERP market continues to benefit from a widespread acceptance of the idea that businesses must have integrated information systems to be competitive. Management and IT organizations are realizing that the most effective way to satisfy this need is to purchase an

ERP package that features broad functionality and pre-built integration. The ERP software market came into being in the early 1990s when companies realized they had to integrate the databases and applications that drove their back offices, their manufacturing floors, and their distribution operations. ERP software expanded beyond manufacturers into healthcare, financial services, and other businesses because the same kinds of problems, assembling a product, delivering it, and charging for it, span all industries. Just like companies need to consolidate their business operations into one place, the biggest ERP software vendors have been on a buying binge, and after all of the acquisitions, the installed bases of ERP software are increasingly controlled by a handful of players. Shepherd reckons new ERP mostly by SAP and Oracle. The next biggest player will be Sage Group, followed by Microsoft Infor (which now owns SSA Global). As the ERP methodology has become more popular, software applications have emerged to help business managers implement ERP in business activities such as inventory control, order tracking, customer service, finance and human resources.

ERP Software Services

Enterprise Resource Planning or ERP may be defined as an information system that takes into account all related applications of an enterprise and integrates all departments and functions across a company in a single computer. There are a number of departments (finance, human resource, production, etc.) which form the backbone of the company. Each of these departments has their own processes running. ERP integrates all the individual processes of all individual departments into a single system. Synapse is another offshore software development company in India with a determined focus on ERP software. It develop customized ERP software tailor made according to the business needs of small, medium and large companies.

Enterprise Resource Planning systems (ERPs) integrate (or attempt to integrate) all data and processes of an organization into a single unified system. A typical ERP system will use multiple components of computer software and hardware to achieve the integration. A key ingredient of most ERP systems is the use of a single, unified database to store data for the various system modules. Examples of modules in an ERP which formerly would have been stand-alone applications include: Manufacturing, Supply Chain, Financials, CRM, Human Resources, and Warehouse Management.

SAP ERP or SAP ECC is SAP AG's Enterprise Resource Planning, an integrated software solution that incorporates the key business functions of the organization. SAP ERP is, in the SAP Business Suite and SAP Business All-In-One software, the name for the modules comprising the former SAP R/3. It contains the following solutions.

SAP ERP Human Capital Management:

- End-user Maintenance
- HR and Payroll
- HR Process Management Software
- HR Reporting
- Labor Force Analysis
- Job placement
- Recruitment and Training
- Talent Management

SAP ERP Financials

SAP ERP Operations

SAP R/3 through version 4.6c consisted of various applications on top of SAP Basis, SAP's set of middleware programs and tools. When SAP R/3 Enterprise was launched in 2002, all applications were built on top of the SAP Web Application Server. Extension sets were used to deliver new features and keep the core as stable as possible.

The Web Application Server contained all the capabilities of SAP Basis. SAP ERP consists of several modules, including utilities for marketing and sales, field service, product design and development, production and inventory control, human resources, finance and accounting. SAP ERP collects and combines data from the separate modules to provide the company or organization with enterprise resource planning.

Although there can be major benefits for customers of SAP ERP, the implementation and training costs are high. Many companies experience problems when implementing SAP ERP software, such as failing to specify their operation objectives, absence of a strong commitment or positive approach to change, failing to deal with organizational differences, failing to plan the change to SAP ERP properly, inadequate testing.

All these factors can mean the difference between having a successful implementation of SAP ERP or an unsuccessful one. If SAP ERP is implemented correctly an enterprise can go from its old calculations system to a fully integrated software package. Potential benefits include efficient business process, inventory reduction, and lead time reduction.

Oracle

Corporation's E-Business Suite (also known as Applications/Apps or EB-Suite/ EBS) consists of a collection of enterprise resource planning (ERP), customer relationship management (CRM), and supply-chain management (SCM) computer applications either developed or acquired by Oracle. The software utilizes Oracle's core Oracle relational database management system technology.[1] The E-Business Suite contains several product lines often known by short acronyms.[2]

Significant technologies incorporated into the applications include the Oracle database technologies, (engines for RDBMS, PL/SQL, Java, .NET, HTML and XML), the "technology stack" (Oracle Forms Server, Oracle Reports Server, Apache Web Server, Oracle Discoverer, Jinitiator and Sun's Java).

Products Included in the Suite Include:

- Accounts payable (AP)
- Accounts Receivables (AR)
- General Ledger
- Order Management (OM)
- Oracle CRM
- Oracle Financials
- Oracle HRMS
- Oracle Mobile Supply Chain Applications
- Oracle Order Management
- Oracle Procurement
- Oracle Property Manager[3]
- Oracle Project Portfolio Management
- Oracle Quotes
- Oracle Transportation Management
- Oracle Warehouse Management Systems
- Oracle Inventory Management (INV)
- Oracle Enterprise Asset Management
- Shipping Execution (WSH)

Each product comprises several modules, each separately licensed.

Ramco's Marshal

The enterprise management solution, the ITAA*2000 certified Ramco Marshal, has been developed with an understanding of the forces of change in the business world. Supply chain requirements and customer support issues force many companies to operate from multiple locations and with multiple currencies and multiple languages. Organizational growth and diversity cause businesses to require a broad range of applications and features. Continual business process reengineering is necessary to stay competitive. To respond to forces such as these, Ramco Marshal provides a unique approach featuring distributed computing, breadth of applications, and flexibility. Each of Ramco Marshal application modules are capable of working alone or with other Marshal or third party applications in any configuration, in order to meet specific business needs. Marshal is fully scalable, allowing the addition or subtraction of users, functions, applications, servers, or locations with minimal effort. Marshal tools and utilities facilitate customization on every level from the entire user interface to individual data fields - for a single user, an entire organization, or any number in between. In addition, Marshal was created using industry standard tools (Visual C++ for Microsoft Windows NT and SQL Server) to simplify future addition to or modification of the source code.

EHRM - Objectives - Advantages & Disadvantages

E-HRM is the planning, implementation and application of information technology for networking and supporting at least two individuals or collective actors in their shared performance of HR activities.

"Technological optimistic voices want us to believe that, from a technical perspective, the IT possibilities for HRM are endless: in principal all HR processes can be supported by IT. E-HRM Is the relatively new term for this IT supported HRM, especially through the use of web Technology" (Ruel et al.; 2004).

Advantages

- E-HRM has the potential to influence both efficiency and effectiveness.
- Efficiency can be obtained by reducing the cycle times for meting out paper work, increasing data precision, and reducing excess HR.
- Effectiveness can be affected by improving the competence of both managers and employees to make better, quicker decisions.
- Amplified and easy access to HR data and ease in classifying and reclassifying data

- A higher internal profile for HR leading to better work culture.
- It leads to a more transparent system.
- Considerable reduction of administrative burden
- Provides Integral support for the management of human resources and all other basic and support processes within the company
- A more forceful workflow in the business process, productivity and employee Satisfaction
- E-HRM can save costs while maintaining the quality of data
- Decentralization of HR tasks

Disadvantages

- Illicit Access: One of the basic disadvantages of using E-HRM is that the data gets free accessible to all and anybody can access the strategic information and use it any way without any authorization. It is prone to corruption/hacking/data losses.
- Specialized Knowledge: one of the advantages of E-HRM is that it may help the organization to reduce the cost HR personnel, though it could increase the requirements for technical staff with knowledge specific technology and functional area as well.
- Data Entry Errors: E-HRM can only perform as good as its human programmers and end users.
- Data Entry Errors: E-HRM can only perform as good as its human programmers and end users.
- Improper use due to rigid mindsets: In order to make proper use of E-HRM, it becomes very necessary for the staff to change their mindsets, as many people still have certain inhibitions in using technology in certain facets of their profession. If this transformation in technology is not synchronized with transformation in the mind set and culture of the organization it can lead to a financial fiasco.
- Threat to HR Itself: The propensity of being dependent on technology will reduce the reliance on manpower, thus it poses a great risk on the basic foundation of HR, where the Human resources are considered as an asset and capital to achieve organizational objectives and fulfill the mission and vision of the company.

Self Assessment Questions

1. Explain HRIS in detail.
2. How to collect data that is required for the HRIS?
3. How e-HR enhances the quality of HR functions?
4. What is ERP?
5. Explain the various ERP packages with examples
6. Write a note on the current trends in HRIS.

CASE STUDY

Running Case: LearnInMotion.com

Does Learn In Motion Need an HRIS?

Jennifer was getting frustrated. With only a few employees, the company kept a paper-based file for each employee with personal information, benefits forms, and so on. She and Pierre had decided to outsource payroll, but she still had to spend several hours every two weeks gathering payroll information, such as regular hours, overtime hours, vacation time and sick time that had been taken, and so on, to send to the payroll company.

The benefits information and calculations were supposed to be carried out by the payroll company, but there had been several instances where mistakes had been made. Jennifer and Pierre discussed the issue and decided that as a high-tech company, they should investigate the possibility of computerizing their employee files and information. Even with a very small number of employees, they both thought it might be easier for them to use some sort of HRIS. They have asked you, their management consultants, to provide answers to the following questions.

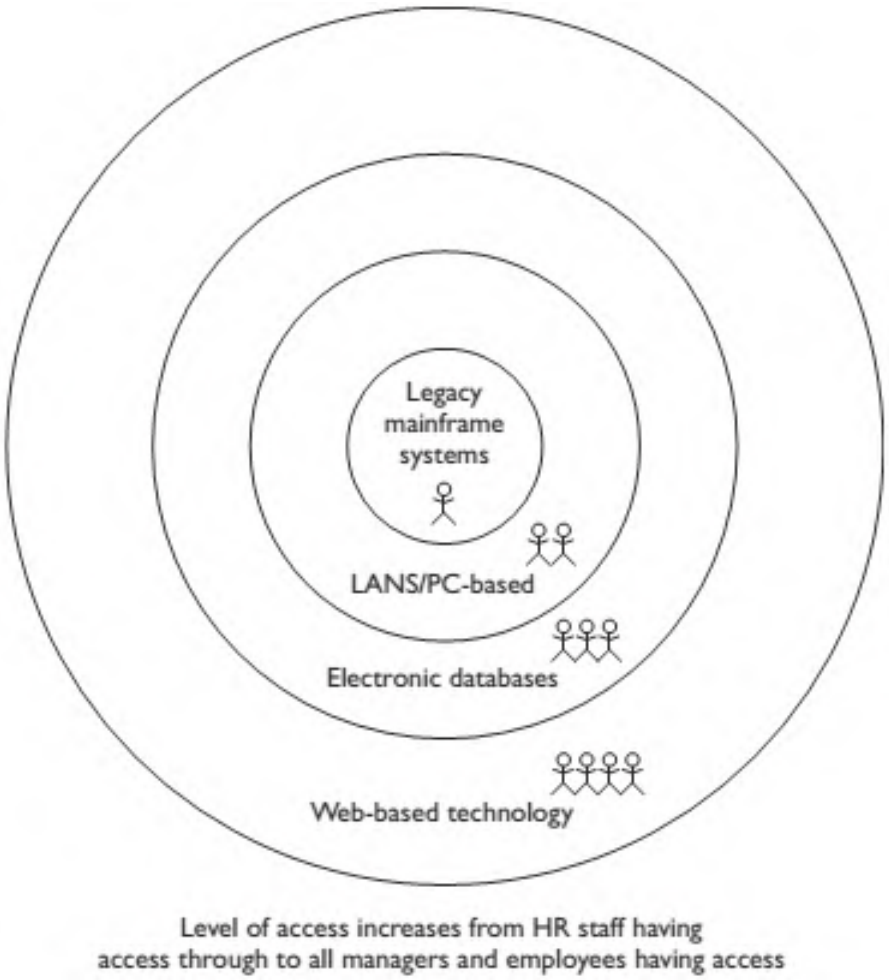
Questions

1. What data should be stored for each employee? How would the company use these data?
2. Conduct an HRIS needs analysis for the company.
3. Would you recommend an HRIS to Jennifer and Pierre? If so, what kind of system?

Additional information

Evolution of Human Resources Technology

HR technology can be defined as any technology that is used to attract, hire, retain, and maintain human resources, support HR administration, and optimize HRM. This technology can use in different types of human resource information systems (HRIS) and by various stakeholders, such as managers, employees, and HR professionals. This technology can be accessed in different ways. There is no doubt that technology has made it easier and faster to gather, collate, and deliver information and communicate with employees. More importantly, it has the potential to reduce the administrative burden on the HR department so it is better able to focus on more meaningful HR activities, such as providing managers with the expertise they need to make more effective HR related decisions. Research has indicated that companies who effectively use technology to manage their HR functions will have a significant advantage over those that do not. However, not all companies have the latest and greatest technology, nor do all companies need the most advanced technology, but all companies do have HR-related information needs.



Illustrates the Evolution of HR Technology

Consider the information needs of a small company as opposed to a large organization of 3000 employees. A small company may use a simple Microsoft Word or Microsoft Excel file to keep basic employee data, whereas a company with 3000 employees manages a greater volume of data. This activity can be daunting without a more sophisticated tool to store and retrieve data. We can reflect on the various levels of sophistication by examining the evolutionary aspects of HR technology. These aspects can be characterized into four stages of development:

(1) Paper-based systems,
(2) Early personal computer (PC) technology,
(3) Electronic databases, and
(4) Web-based technology.

Stages in the Evolution of HR Technology

Stage 1: Paper-Based Systems

Initially HR systems were "paper-based." These systems operated independently and did not integrate with any other business-related functions. Features were added as needed. Data were typically stored on mainframe computers, the reporting was very rudimentary, and HR was the sole custodian of the data. It was common for managers during this period to send employees to HR to get their all their "personnel" questions answered.

Stage 2: Early Personal Computer (PC) Technology

In the next stage, there was a migration of the information resident in these paper-based systems to PCs and local area network (LAN) systems. These HR databases were able to produce reports that simply listed "tombstone" data, meaning basic employee information. Advances in database technology included payroll and some very basic versions of employee tracking.

The HR data were typically stored on a **client server**—network architecture in which each computer on the network is either a client or a server. Servers are powerful computers dedicated to managing disk drives (file servers), printers (print servers), or network traffic (network servers). Clients are PCs or other workstations on which users, such as HR professionals, run software applications. Clients rely on servers for resources, such as files; devices, such as printers; and even processing power.

For example, when sourcing information from Wikipedia, the user's computer and Web browser would be the client, and the computers, databases, and applications that compose Wikipedia would be the server. When the user's Web browser requests a particular article from Wikipedia, the Wikipedia server finds all of the information required to display the article in the Wikipedia database, assembles it into a Web page, and sends it back to the Web browser for the user to look at.HR continued to be the only group who had access to the system and continued to be the owner of the data.

Stage 3: Electronic Database Systems

The next stage began with the emergence of relational database technology. A **relational database** means that a piece of data can be stored in more than one file, each one containing different types of data. The different files can be linked so that information from the separate files can be used together. A relational database allows databases to be established in several different locations and the information linked. This technology provided organizations with the ability to develop more complex reports that integrated several data elements.

For example a report could be generated from different databases that included name, address, and salary and benefit information. With this move toward electronic databases, HR systems began to become integrated with other business-related systems. Leading HR organizations began to purchase enterprise-wide systems that included HR-related modules. An enterprise-wide system is defined as a system that supports enterprise-wide or cross-functional requirements, rather than a single department or group within the organization. Popular enterprise-wide system at the time was SAP.

At this time, use of the Internet was increasing, and managers began to consider what it could offer to HR technology. HR continued to own the HR data, but HR began to evolve into a more integral part of the business, as these databases became important in aiding HR with the generation of reports and empowering HR to provide managers with meaningful HR-related information. In addition, other functional areas could share information from these databases. For example, if the company decided it wanted to send out a mass mailing to employees to introduce a new product or organizational change, it would access the data from the HR system.

At this point, HR entered fully into the digital world of electronic HR and the term "e-HR" began to appear.

Stage 4: Web-Based Technology

At the present time, many companies have started to embrace HR technology. The benefits of automation are becoming widely known to HR and other areas of the business. The focus has shifted to automating as many transactions as possible to achieve effectiveness and efficiencies. Call centers and interactive voice response systems are widely used by organizations. An interactive voice response (IVR) system is a telephone technology in which a touch-tone phone is used to interact with a database to acquire information from it or enter data into it.

For example, employees can call in to report their attendance by entering a specific code. Web-based applications use a Web browser as a user interface (called the "front-end"). Users can access the applications from any computer connected to the Internet via a secure, password-protected login page and from that point forward all the data are encrypted.

For the most part, the HR department continues to be the owner and custodian of HR information but others have begun to recognize the value of this information to the business. The reports that HR is able to produce have become more sophisticated. At this point, the majority of systems are still not Web-based, but some leading-edge organizations have embraced this technology.

What's Next?

The technology of the future will be about speedy access to accurate current information, and the ability to access this information via multiple systems will give organizations a strategic edge. HR is expected to relinquish its role as sole owner of HR information, so that managers and employees can use this information to solve their own problems using Web-based systems. This new system will not necessarily mean a reduction in HR staff. The new system will enable HR professionals to focus on transforming information into knowledge that can be used by the organization for decision making; it will be about HR and IT working together to leverage this technology.

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UNIT – II

Unit Structure

Lesson 2.1 - Data Management

Lesson 2.1 - Data Management

Learning Objectives

After reading this lesson you should be able to know about

- Data management for Human Resource Information System
- Data formats
- Entry procedure & process
- Data storage & retrieval
- Transaction processing
- Office automation
- Information processing and control functions
- Design of Human Resource Information System
- Relevance of decision making concepts for information system design
- Human resource management needs analysis
- Concept & mechanics
- Standard software and customized software
- Investment in Human Resource Information System

The human resource of any organization is recognized as the greatest asset. With high training and educational standards, numerous technical and professional certifications, job descriptions and classifications, benefits coverage, changing work environments, health and safety issues, diverse working conditions and pay scales, it is very much necessary to develop a comprehensive Human Resource Information System to address these issues on a secure database.

Information System

Information system is a systematic formal assemblage of components to perform data processing operations of an organization for

(I) Meeting legal data processing requirements,

(ii) Providing information to managers to carry out their function effectively and

(iii) Providing various useful reports required.

Management Information System (MIS)

The Management Information System refers to connection of managed operating system by exchange of information. It is the operative system required to perform variety of functions to produce useful outputs for efficient management of an organization. It is very significant to find that more and more organizations emphasize application of management information system for increase in the efficiency of management. The Management Information System utilizes computer hardware and software, manual procedures, management decision models and a database to provide information in support of management operations, and decision-making function in an organization. MIS is organized method of providing past, present and projected information relating to internal operations of an organization and external intelligence by good environmental scanning technique.

Human Resource Information System (HRIS)

Human Resource Information System refers to the system of collecting, recording, classifying, presenting, processing, storing and disseminating various information, required for efficient and effective management of human resources in an organization. In order to manage diverse, expensive, and human resource information in complex environment, human resource department of various organizations have increasingly used computer based human resource information system.

Human Resource Information System (HRIS) supports strategic and operational use of the human resource.

HRIS is required for the following purposes.

(1) Planning human resource requirements of organization

(2) Employee training & development to increase efficiency

(3) Formulation of policies and program relating to human resource

The Human Resource Information System (HRIS) is a software package that provides a complete management system for human resource activities in small-to-medium-sized businesses. They help streamline administrative procedures, manage employee benefits, reduce the need for paperwork and manual records, and keep track of all personal and job-related employee data. The Human Resources Information System is helpful for different organizations to set measurable benchmarks to acquire, train and retain the best employees, co-ordinate employee job descriptions with areas of responsibility, schedule training for recertification, safety, and revised work procedures, provide incentives to motivate and improve employee performance, track accident statistics and implement corporate strategies to improve overall health and safety. While the database provides quick access and track for the entire work history, every employee can be able to view only their personal information over systematic human resource information system. HRIS can handle management of benefits for both HR personnel and company employees. HR directors can import payroll and benefits data into HRIS from in-house and outside sources. This allows them to manage all facets of HR from a single location. It also provides employees with self-service access to their accounts. With a secure system that requires a log in ID and password for each user, employees can check vacation balances, review benefits data, and update personal information without having to first contact HR staff.

Basic Features of HRIS

In lieu of standardized paperwork, HRIS allows employees to fill out forms online, make changes based on life events, and get information on their benefits at any time. Rather than "pulling an employee's file," HR personnel can refer any information about an employee through the system, including personal information, benefits, number of dependents, emergency contacts, and job history.

HRIS includes both standardized and customized reports. Standard reports feature templates for various administrative purposes including employee reviews, record keeping, workers' compensation, employment history, and absence tracking. Customized reports are created that incorporate categories and information unique to business. Most HRIS applications have a comprehensive tracking system. HRIS tracking capabilities can maintain grievances filed by or against the employee stemming from discipline, disputes, and complaints. Quick reference guides can be available relating to all areas of the Human Resources Information System, including staff benefits, benefit contribution rates, calendars, personnel change reason codes, and the payroll process flowchart. Detailed instructions regarding establishing and changing employee benefit and deduction information, including retirement, pension, health care, flexible spending accounts and employee selected deductions.

Documentation on the human resource accounting structure can be possible; including staff benefit calculations and charges, review and correction of human resource accounts. Documentation is helpful for payroll issues, including time reporting requirements, check and auto deposit distribution, taxable benefits, terminations, review and correction of employee pay and leave, and tax forms. Instructions and forms for employees to establish or change their employee information related to the Human Resources system, including name, address, retirement, pension, and health care.

Data Management for HRIS

Only some of the organizations have sufficient policies and procedures in place to collect the majority of necessary human resource data. For those not having sufficient policies and procedures in place, this deficiency limit their ability to extract, report or analyze performance in areas where information is not collected and maintained in a structured format.

The organizations themselves should be aware of many of the shortcomings in their HR data. Partly, this may be the result of a number of internal audits that had been carried out in the organizations, and partly, feedback from staff and external bodies. Issues surrounding data quality indicates that data collection policies and procedures are not always implemented successfully in practice.

The organizations, which take, planned and measured approach to the implementation and ongoing management of their HRIS, tend to make more effective use of their systems. These organizations were better positioned to generate information for a greater range of strategic and operational human resource purposes. The other organizations take a less structured, more urgent approach, as short-term human resource processing requirements drove their management of the system.

Elements of Data Management

As noted above data management can be viewed as comprising the following tasks:

- Capture refers to movement of data from the instrument or simulation to the storage mechanism. This often involves some form of data selection or compression. It also involves the creation of Meta data.
- Storage refers to the place and procedure required for storage of data by the use of automated data vaults and tape stores

- Management refers to indexing and cataloguing the data and providing methods to organize and move it from site to site or between programs which involves meta data and self-defining data formats.
- Analysis refers to processing or fusion and mining the data to extract the science.
- Visualization refers to presenting the data in a variety of forms to aid analysis and the dissemination of results.

Data Format

Only some of the organizations had sufficient policies and procedures in place to collect the majority of the necessary HR data. For those not having sufficient policies and procedures in place, this deficiency may limit their ability to extract report or analyze performance in areas where information cannot be collected and maintained in a structured and easy to access format. Data has motion, going from one location to another. It is more and more moving between systems, persons, departments, and organizations. This is essential, as it indicates that data is actually used, rather than just stored. In order to emphasize the actual use of data, there is need for information or knowledge. When data is in motion, there is not only a change of place or position, but also change in other aspects. The data "format" may change when it is transferred between systems. This includes changes in data structure, data model, data schema, data types, etc.

The "interpretation" of data may also vary when it is passed on from one person to another. Changes in interpretation are part of data semantics rather than data structure. The "level of detail" may change in the exchange of data between departments or organizations, e.g. going from coworkers to managers or from local authorities to the central government. In this context often changes are seen in the level of detail, by the application of abstraction, aggregation, generalization, and specialization. Moreover, the "systems development phase" of data models may vary. This is particularly the case when implementation-independent data models are mapped to implementation-oriented models (e.g. semantic data models are mapped to operational database specifications).

Common Data Format

The Common Data Format is a self-describing data format for the storage and manipulation of scalar and multidimensional data in a platform and discipline independent fashion. When one first hears the term "Common Data Format" one intuitively thinks of data formats in the traditional sense of the word. Although there may be own internal self-describing format, it consists of more than just a data format. This is a scientific data

management package, which allows programmers and application developers to manage and manipulate scalar, vector, and multi-dimensional data arrays. Therefore, programmers are not burdened with performing low level physically format and un-format data file.

Entry Procedure and Process

All organizations should have appropriate guides and instructions, which outline the processes for entering data and preparing reports from their HRIS systems. However, in most cases, considerable efforts and resources are required to collect and arrange the data for presentation to users.

Lack of awareness of the capabilities of the HRIS, and lack of staff training, also indicates that the capabilities of HRIS are not being maximized in the most efficient and effective manner. In most of the organizations, there may be a number of significant gaps in the human resource reports produced for management. These gaps may be the result of the organizations not identifying these issues as information needs or not having policies, procedures and systems in place to capture required information.

Information used for Decisions

All organizations should use information from the HRIS to monitor progress in some important HR areas and to make decisions regarding key operational issues. Although shadow systems were sometimes used to generate additional HR data, particularly for some of the more strategic HR issues, this represented something of a missed opportunity. However, many managers consider that there is scope to improve the information that is provided to them on a regular basis.

Continuous Improvement

Although the organizations review aspects of their HR information needs, processes and data quality from time to time, it is not usually done as part of a systematic management plan and business plan. There may be lack of basic financial and operational information on costs, which made it impossible for the organizations to measure the cost-effectiveness of their HRIS, including core and shadow systems, and the return on their investment.

Human Resource Process

The Human Resource Process includes maintenance of personnel records, annual review and revision of employee handbook, audit of HR strategies, policies and procedures,

implementation of employment/termination procedures, employee development program, performance management process, on-site support, employee retention programs, employee morale building, and compensation plan review.

Recruiting and Employment Process

Different activities of recruiting service process are employment verification, job description development strategy, applicant screening, reference and background check, conduct of interviews etc. This process involves back office support for recruitment processes, skill testing and new employee orientation program.

Benefits Administration Processes

Various activities of this process are brokerage services, custom benefit plan strategies and design, benefit analysis, cost control and reduction, recommendations, development of employee communications, eligibility and enrollment services, employee claims resolution, monthly invoice audit and reconciliation, on-line employee access to benefits information, health and welfare, defined benefit, defined contribution, employee call center, Ecommerce etc.

Other Processes

Other processes are payroll process, HR outsourcing processes, talent solutions consulting processes, contact center processes, health care processes, talent and organizational change processes, personnel policies & procedures, human resource administration processes, training & development processes, wage and salary administration processes, employee relations processes, knowledge management processes etc.

Data Storage and Retrieval

A data storage and retrieval system separates information regarding the expertise of individuals into four files, which can be independently and separately accessed. The records in the various files include fields for indicating the beginning and end of a range of topics within a hierarchical classification system, the level of the topic within the classification system and a field for facilitating alphabetic sorting of topics independently of hierarchical level, and a novel code format for the beginning and end of range indicators permits a small computer to effectively manipulate data in a hierarchical classification system.

Data Storage

Data storage is a method of operating a computer system having memory for storing and retrieving information concerning a subject, which comprises the following:

(a) In the computer system memory, storing subject data concerning a plurality of subjects wherein said data includes descriptive phrases regarding various matters with which said subjects are concerned and wherein said data includes identifying information for identifying the subjects associated with said descriptive phrases;

(b) Assigning selected designation numbers to said descriptive phrases and storing said selected designation numbers in the computer system memory in association with the corresponding descriptive phrases and with the identifying information wherein said designation numbers correspond to a respective plurality of topics;

(c) In the computer system memory, storing a plurality of topic headings with each heading being designated to include a specified range of designation numbers;

(d) In the computer system, for each designation number assigned to a descriptive phrase, determining which of said topic heading range includes said designation number and storing that designation number and corresponding descriptive phrase in association with the associated topic heading;

(e) Searching the computer system memory for one of the phrase descriptive of a selected matter of interest, a range of designation numbers, and a designation number, and if a descriptive phrase is identified, determining the designation number;

(f) Using one of said range and designation number determined in step (e) to retrieve from the computer system memory the corresponding identifying information concerning the associated subject.

Primary Storage

Primary storage relates to semiconductor memory chips and is used to store the data and program currently in use. In some data processing, all instructions and data are entered in primary storage by which the computer completes its processing for results to be presented. Each storage element of memory is directly accessible which can be examined and modified without affecting other cells. Thus primary memory is also called Random Access Memory (RAM). In some applications, computer's primary storage capabilities are insufficient and unable to handle the instructions and data needed for processing. Primary storage has volatile memory for which it is desirable to save the results of processing.

Secondary Storage

Secondary storage is the nonvolatile memory that is stored externally to the computer. Three secondary storage media used with all sizes of computer are magnetic tapes, magnetic disks and optical technology. Through secondary storage, large volume of information can be conveniently stored for future retrieval.

The two types of secondary memory available are serial access memory and random access memory. It is helpful to understand in terms of a cassette tape to provide serial access memory and L.P. record to provide random access memory.

Data Warehouse for Storage

A data warehouse is a computer system designed for analyzing the historical data of an organization, such as sales, salaries, or other information from day-to-day operations. Normally, an organization summarizes and copies information from its operational systems (such as human resources) to the data warehouse on a regular schedule, such as every night or every weekend; after that, management can perform complex queries and analysis on the information without slowing down the operational systems.

The data warehouse also normally stores information at a coarser grain than the operational systems: for example, if the operational systems contain a record for every sale, the data warehouse might simply contain the total number of sales for each product at each store. The data warehouse need not be a relational database, as it must be organized to hold information in a structure that best supports not only query and reporting, but also advanced analysis techniques, like data mining. Most data warehouses hold information for at least one year and sometimes can reach half century, depending on the business/ operations data retention requirement. As a result these databases can become very large.

History of Data Warehousing

Data Warehouses became a distinct type of computer database during the late 1980's and early 1990's. They developed to meet a growing demand for management information and analysis that could not be met by operational systems. Operational systems were unable to meet this need for a range of reasons:

- The processing load of reporting reduced the response time of the operational systems,

- The database designs of operational systems were not optimized for information analysis and reporting,
- Most organizations had more than one operational system, so companywide reporting could not be supported from a single system, and
- Development of reports in operational systems often required writing specific computer programs which was slow and expensive
- As a result, separate computer databases began to be built that were specifically designed to support management information and analysis purposes. These data warehouses were able to bring in data from a range of different data sources, such as mainframe computers, minicomputers, as well as personal computers and office automation software such as spreadsheet, and integrate this information in a single place. This capability, coupled with user-friendly reporting tools and freedom from operational impacts, has led to a growth of this type of computer system.
- As technology improved (lower cost for more performance) and user requirements increased (faster data load cycle times and more features), data warehouses have evolved through several fundamental stages:
- Offline Operational Databases- Data warehouses in this initial stage are developed by simply copying the database of an operational system to an off-line server where the processing load of reporting does not impact on the operational system's performance.
- Offline Data Warehouse- Data warehouses in this stage of evolution are updated on a regular time cycle (usually daily, weekly or monthly) from the operational systems and the data is stored in an integrated reporting-oriented data structure
- Real Time Data Warehouse- Data warehouses at this stage are updated on a transaction or event basis, every time an operational system performs a transaction (e.g. an order or a delivery or a booking etc.)
- Integrated Data Warehouse- Data warehouses at this stage are used to generate activity or transactions that are passed back into the operational systems for use in the daily activity of the organization. Data warehouse operations comprise of the processes of loading, manipulating and extracting data from the data warehouse. Operations also cover user management, security, capacity management and related functions.

Optional Components

In addition, the following components also exist in some data warehouses:

1. Dependent Data Marts: A dependent data mart is a physical database (either on the same hardware as the data warehouse or on a separate hardware platform) that receives all its information from the data warehouse. The purpose of a Data Mart is to provide a sub-set of the data warehouse's data for a specific purpose or to a specific sub-group of the organization.

2. Logical Data Marts: A logical data mart is a filtered view of the main data warehouse but does not physically exist as a separate data copy. This approach to data marts delivers the same benefits but has the additional advantages of not requiring additional (costly) disk space and it is always as current with data as the main data warehouse.

Different Methods of Storing Data

All data warehouses store their data grouped together by subject areas that reflect the general usage of the data (Customer, Product, Finance etc.). The general principle used in the majority of data warehouses is that data is stored at its most elemental level for use in reporting and information analysis. Within this generic intent, there are two primary approaches to organizing the data in a data warehouse.

Dimensional Approach

The first is using a "dimensional" approach. In this style, information is stored as "facts" which are numeric or text data that capture specific data about a single transaction or event, and "dimensions" which contain reference information that allows each transaction or event to be classified in various ways.

As an example, a sales transaction would be broken up into facts such as the number of products ordered, and the price paid, and dimensions such as date, customer, product, geographical location and sales person. The main advantages of a dimensional approach are that the Data Warehouse is easy for business staff with limited information technology experience to understand and use. Also, because the data is pre-processed into the dimensional form, the Data Warehouse tends to operate very quickly. The main disadvantage of the dimensional approach is that it is quite difficult to add or change later if the company changes the way in which it does business.

Database Normalization Approach

The second approach uses database normalization. In this style, the data in the data warehouse is stored in third normal form. The main advantage of this approach is that it is quite straightforward to add new information into the database, whilst the primary disadvantage of this approach is that it can be quite slow to produce information and reports.

Advantages of Using Data Warehouse

Through data ware house, business decision makers can obtain various kinds of trend reports e.g. the item with the most sales in a particular area / country for the last two years. This may be helpful for future investments in a particular item.
There are many other advantages of using a data warehouse, some of which are explained below. The data ware house

- Enhances end-user access to a wide variety of data.
- Increases data consistency.
- Increases productivity and decreases computing costs.
- Combines data from different sources, in one place.
- Provides an infrastructure that could support changes to data and replication of the changed data back into the operational systems.

Concerns in Using Data Warehouse

The use of data warehouse has the following concerns for the storage of data for an organization.

- Extracting, cleaning and loading data could be time consuming. But this can be made easy with the help of warehousing tools.
- Data warehousing project scope might increase.
- Problems with compatibility with systems already in place e.g. transaction processing system.
- Providing training to end-users, who end up not using the data warehouse.
- Security can be developed into a serious issue, especially if the data warehouse is web accessible.

Retrieval System

One form of retrieval system relates to locating and retrieving books in a library. With the advent of computers, the development of on-line automated catalogs for bibliographic retrieval became a reality. Another form of data retrieval involves searching data bases based on specific query criteria, and such data storage and retrieval systems of great complexity and sophistication are possible With the advent of the personal computer, three developments occurred. First, data base application programs are created, which make it possible for any computer-literate person to create and use his own database. Second, the data base application programs make it very easy to modify, change, and adapt the form and structure of existing databases. Third, by creating individual databases, data control and security is moved much closer to the database. Effectiveness of the data base application program is directly related to the power, sophistication, and ease-of-use of the query or search routines incorporated into the program.

The ability of the data base application program to employ Boolean algebraic search routines, combined with the capacity to handle searches expressed, as complex, large formulas is critical. A significant dimension of a retrieval system is its ability to define and accommodate hierarchical searching procedures. This critical and useful dimension, usually missing from most systems because of complexity in implementation, must be incorporated at the time of storage and retrieval. While single-site data bases require no special characteristics, data base systems intended for multiple-site configuration pose special problems if the data control and security benefits inherent in single-site data bases are not to be compromised in an effort to catalog individuals at multiple sites and/or to provide multiple-site access to the data base. Data retrieval can be regarded as a natural instance of multi criteria decision-making. Queries are formulated as selection criteria aggregated by means of appropriate operators. Retrieval is then performed as a process by evaluating the degrees of satisfaction of the criteria by each document, and then aggregating them. Another decisional instance concerns the problem of improving retrieval performance by taking into account user indications on documents relevance. Relevance feedback mechanisms exploit user-system interaction in order to improve retrieval results by means of an iterative process of query refinement. In this process the main decisional issue is that of finding new concepts, with which to expand-modify the initial query so that it better reflects the user's information needs.

Transaction Processing

A transaction is a unit of program execution that accesses and possibly updates various data items. It refers to collection of operations that form a single logical unit of

work. Transaction processing is designed to maintain a database in a known, consistent state, by ensuring that any operations carried out on the database that are interdependent are either all completed successfully or all cancelled successfully.

Transaction processing allows multiple individual operations on a database to be linked together automatically as a single, indivisible transaction. The transaction-processing system ensures that either all operations in a transaction are completed without error, or none of them are. If some of the operations are completed but errors occur when the others are attempted, the transaction-processing system "rolls back" all of the operations of the transaction (including the successful ones), thereby erasing all traces of the transaction and restoring the database to the consistent, known state that it was in before processing of the transaction began. If all operations of a transaction are completed successfully, the transaction is "committed" by the system, and all changes to the database are made permanent; the transaction cannot be rolled back once this is done.

Transaction processing guards against hardware and software errors that might leave a transaction partially completed, with a database left in an unknown, inconsistent state. If the computer system crashes in the middle of a transaction, the transaction processing system guarantees that all operations in any uncommitted (i.e. not completely processed) transactions are cancelled.

The concept of a transaction and a transaction processing service simplifies construction of such enterprise level distributed applications while maintaining integrity of data in a unit of work. A transaction is a unit of work that has the following properties:

Atomicity

A transaction should be done or undone completely and unambiguously. In the event of a failure of any operation, effects of all operations that make up the transaction should be undone, and data should be rolled back to its previous state.

Consistency

A transaction should preserve all the invariant properties (such as integrity constraints) defined on the data. On completion of a successful transaction, the data should be in a consistent state. In other words, a transaction should transform the system from one consistent state to another consistent state. For example, in the case of relational databases, a consistent transaction should preserve all the integrity constraints defined on the data.

Isolation

Each transaction should appear to execute independently of other transactions that may be executing concurrently in the same environment. The effect of executing a set of transactions serially should be the same as that of running them concurrently. This requires two things:

1. During the course of a transaction, intermediate (possibly inconsistent) state of the data should not be exposed to all other transactions.

2. Two concurrent transactions should not be able to operate on the same data. Database management systems usually implement this feature using locking.

Durability

The effects of a completed transaction should always be persistent and durable for the human resource information system of different organizations. Transaction management is one of the most crucial requirements for enterprise application development. Most of the large enterprise applications in the domains of finance, banking and electronic commerce rely on transaction processing for delivering their business functionality. Given the complexity of today's business requirements, transaction processing occupies one of the most complex segments of enterprise level distributed applications to build, deploy and maintain. Enterprise applications often require concurrent access to distributed data shared amongst multiple components, to perform operations on data. Such applications should maintain integrity of data (as defined by the business rules of the application) under the following circumstances:

- Distributed access to a single resource of data, and
- Access to distributed resources from a single application component.

In such cases, it may be required that a group of operations on (distributed) resources be treated as one unit of work. In a unit of work, all the participating operations should either succeed or fail and recover together. This problem is more complicated when

- A unit of work is implemented across a group of distributed components operating on data from multiple resources, and/or
- The participating operations are executed sequentially or in parallel threads requiring coordination and/or synchronization.

In either case, it is required that success or failure of a unit of work be maintained by the application. In case of a failure, all the resources should bring back the state of the data to the previous state (i.e. the state prior to the commencement of the unit of work).

Application Components

Application components are clients for the transactional resources. These are the programs with which the application developer implements business transactions. With the help of transaction manager, these components create global transactions, propagate the transaction context if necessary, and operate on the transactional resources within the scope of these transactions. These components are not responsible for implementing semantics for preserving properties of transactions. However, as part of the application logic, these components generally make a decision whether to commit or rollback transactions.

Resource Managers

A resource manager is a component that manages persistent and stable data storage system, and participates in the two-phase commit and recovery protocols with the transaction manager. A resource manager is typically a driver or a wrapper over a stable storage system, with interfaces for operating on the data (for the application components), and for participating in two-phase commit and recovery protocols coordinated by a transaction manager.

This component may also, directly or indirectly, register resources with the transaction manager so that the transaction manager can keep track of all the resources participating in a transaction. This process is called as resource enlistment. For implementing the two-phase commit and recovery protocols, the resource manager should implement supplementary mechanisms using which recovery is possible. Resource managers provide two sets of interfaces: one set for the application components to get connections and perform operations on the data, and the other set for the transaction manager to participate in the two-phase commit and recovery protocol.

Transaction Manager

The transaction manager is the core component of a transaction processing environment. Its primary responsibilities are to create transactions when requested by application components, allow resource enlistment and dlistment, and to conduct the two-phase commit or recovery protocol with the resource managers.

Responsibilities of Transaction Manager

The Transaction Manager of an organization has the following important responsibilities.

1. Establish and maintain transaction context
2. Maintain association between a transaction and the participating resources.
3. Initiate and conduct two-phase commit and recovery protocol with resource managers.
4. Make synchronization calls to the application components before beginning and after end of two-phase commit and recovery process

A typical transactional application begins a transaction by issuing a request to a transaction manager to initiate a transaction. In response, the transaction manager starts a transaction and associates it with the calling thread. The transaction manager also establishes a transaction context. All application components and/or threads participating in the transaction share the transaction context. The thread that initially issued the request for beginning the transaction, or, if the transaction manager allows, any other thread may eventually terminate the transaction by issuing a commit or rollback request. Before a transaction is terminated, any number of components and/or threads may perform transactional operations on any number of transactional resources known to the transaction manager. If allowed by the transaction manager, a transaction may be suspended or resumed before finally completing the transaction. Once the application issues the commit request, the transaction manager prepares all the resources for a commit operation (by conducting a voting), and based on whether all resources are ready for a commit or not, issues a commit or rollback request to all the resources.

Transaction Demarcation

A transaction can be specified by what is known as transaction demarcation. Transaction demarcation enables work done by distributed components to be bound by a global transaction. It is a way of marking groups of operations to constitute a transaction. The most common approach to demarcation is to mark the thread executing the operations for transaction processing. This is called as programmatic demarcation. The transaction so established can be suspended by unmarking the thread, and be resumed later by explicitly propagating the transaction context from the point of suspension to the point of resumption. The transaction demarcation ends after a commit or a rollback request to the transaction manager. The commit request directs all the participating resources managers to record the effects of the operations of the transaction permanently. The rollback request makes

the resource managers undo the effects of all operations on the transaction. An alternative to programmatic demarcation is declarative demarcation. Component based transaction-processing systems such as Microsoft Transaction Server, and application servers based on the Enterprise Java Beans specification support declarative demarcation. In this technique, components are marked as transactional at the deployment time. This has two implications. Firstly, the responsibility of demarcation is shifted from the application to the container hosting the component. For this reason, this technique is also called as container managed demarcation. Secondly, the demarcation is postponed from application build time (static) to the component deployment time (dynamic).

Transaction Context and Propagation

Since multiple application components and resources participate in a transaction, it is necessary for the transaction manager to establish and maintain the state of the transaction as it occurs. This is usually done in the form of transaction context. Transaction context is an association between the transactional operations on the resources, and the components invoking the operations. During the course of a transaction, all the threads participating in the transaction share the transaction context. Thus the transaction context logically envelops all the operations performed on transactional resources during a transaction. The underlying transaction manager usually maintains the transaction context transparently.

Resource Enlistment

Resource enlistment is the process by which resource managers inform the transaction manager of their participation in a transaction. This process enables the transaction manager to keep track of all the resources participating in a transaction. The transaction manager uses this information to coordinate transactional work performed by the resource managers and to drive two-phase commit and recovery protocol. At the end of a transaction (after a commit or rollback) the transaction manager delists the resources. Thereafter, association between the transaction and the resources does not hold.

Two-Phase Commit

This protocol between the transaction manager and all the resources enlisted for a transaction ensures that either all the resource managers commit the transaction or they all abort. In this protocol, when the application requests for committing the transaction, the transaction manager issues a prepare request to all the resource managers involved. Each of these resources may in turn send a reply indicating whether it is ready for commit or not. Only when all the resource managers are ready for a commit, does the transaction manager

issue a commit request to all the resource managers. Otherwise, the transaction manager issues a rollback request and the transaction will be rolled back. Transaction processing has always been complex and critical. However, transaction processing has caught the interest and attention of both developers and IT organizations simultaneously. This is not without reason. These recent technologies simplify distributed transaction management, and are fueled by two major developments:

- Component Based Development: Based on the above interface centric paradigms, component based distributed application development has become a reality.
- Object Orientation: The maturity of object-oriented programming assisted by design patterns and frameworks, made implementation of these technologies feasible.

In addition, these technologies address the scalability and robustness that are required for today's enterprise applications.

Office Automation

Office automation refers to the varied computer machinery and software used to digitally create, collect, store, manipulate, and relay office information needed for accomplishing basic tasks and goals. Raw data storage, electronic transfer, and the management of electronic business information comprise the basic activities of an office automation system. Office Automation helps in optimize or automate existing office procedures.

The backbone of office automation is a LAN, which allows users to transmit data, mail and even voice across the network. All office functions, including dictation, typing, filing, copying, fax, telex, microfilm and records management, telephone and telephone switchboard operations, fall into this category.

Office automation was a popular term in the 1970s and 1980s as the desktop computer exploded onto the scene. One critical variable affecting the success in office automation is user acceptance. No matter how technologically superior the equipment is, there may be failure if users reject it. Office Automation for different organizations should include the following important functions.

- Generate Microsoft Word documents or business forms from data stored in other applications such as Microsoft Access
- Generate presentations from external data

- Automatically send emails to customers or groups in Microsoft Outlook
- Create custom data entry mechanisms for Microsoft Office Documents
- Create custom procedures for CAD programs
- Maintain and organize data stored in Microsoft Excel or Microsoft Access
- Create stand-alone executable to automate your office environment

Attributes and Advantages

It is observed that, there is rapid growth in the use of Office Automation systems from the past few years. This growth can be attributed to the following reasons.

1. Value of information and information explosion
2. Increase in office cost and need to improve office productivity
3. Availability of equipment and skills

Large numbers of organizations are being benefitted by office automation due to the following advantages related to the human resource information system.

1. Better utilization of human resources
2. Improved quality of work
3. Efficient decision
4. Better service for customers
5. Increased organizational effectiveness

Office Automation Functions

Different offices perform the same basic functions and operations irrespective of the type and size of the office. There can be creation of original documents and providing inputs to the automation system from documents received outside. There is extraction of data for further presentation as required, storing and retrieving it for subsequent reference. Additional comments, notes and references can be helpful for decision making and duplicating the documents for distribution. For transferring documents and communications to different individuals, the office automation makes extensive use of data communications and networking facilities. Another function of office automation is presentation of data either on screen for visual inspection or in the form of printouts or in any other form required by the users.

Information Processing & Control Functions

Invariably it is found that various information flow from one place to another and from person to person for the purpose of taking appropriate decision in an organization. Information processing requires lot of detailed planning to provide control mechanisms in every stage to ensure data integrity.

Because in computerized MIS, information can be processed as per predefined set of instructions and computer cannot take decisions like human being to change data to meet particular condition or wrong reporting. In computerized MIS, a synthesis between human efforts and computer capacity need to be brought about for successful information processing at different levels.

Higher Level

In the higher level for processing of selected data human efforts are related to appropriate decision, proper policy, future plan and required feedback for effective control. Through computer efforts, there should be achievement of targets by having exception reports and predictive reports.

Middle Level

In the middle level, for having summary data from different inputs, human efforts should be related to preparation of process schedule, planning of control activities and collection of feedback information for improvement. At this level, required data should be processed as per schedule to prepare output reports and to create back up data.

Lower Level

In the lower level, database can be created and data can be processed for editing, compiling and reporting. In this level, much importance is necessary for data review, correct data control input to edit data, store data and prepare control reports according to the requirements of an organization.

Design of HRIS

A system means a group of procedures, which are interrelated and interdependent for acting upon to result in a large unit of work. The system approach to human resource management must precede the design and use of HRIS. The management of different

organizations must take active part in the design of HRIS. Participatory design process is advocated for successful implementation of HRIS in an organization. Technical knowledge of the computer, though preferable, is not very much necessary for the manager to perform the role in the design of HRIS. The information system should have a systematic formal assemblage of components to perform data processing operations for the following purposes.

1. Meeting the legal and transactional data processing requirements
2. Providing information to managers to carry out their functions effectively
3. Providing various useful reports required by internal and external constituents

The design of Human Resource Information System depends on the nature and size of the organization, requirements of management, compliance of governmental regulations, availability of suitable software packages etc. For the design of HRIS, the following steps should be taken.

Preliminary System Analysis

This step involves definition of the problem, specification of objectives, identification of operational needs, diagnosis of constraints, preparation of feasibility report etc.

Systems Design

In this step, the problems are to be described in detail, alternative solutions are to be developed and evaluated, broad engineering requirements of the selected alternatives are to be specified to evaluate the effects on people.

Systems Engineering

In the next step, a detailed study of engineering components and their cost effectiveness should be made to make recommendations about the system to top management for approval and adoption in the organization.

System Testing and Installation

This step includes various activities for testing of Human Resource Information System for effective operation and successful installation in different departments in the organization.

Systems Monitoring and Evaluation

This step involves measuring the performance of the system, its continuous evaluation and modification according to strategic requirements and competitive advantages of the organization.

Relevance of Decision Making Concepts for Information System Design

Despite the fact that decision making can be treated as a central aspect of managing, the literature and teaching surrounding decision making have generally focused on the moment of decision rather than the on the whole lengthy, complex process of defining and exploring many alternatives in a decision that precedes the final act of deciding. Those who utilize management information system to assist in decision making process, the steps in problem solving and systems design are extremely important.

It is very important to differentiate between programmed and no programed decisions representing the extremities of the range of decisions. The major reason to distinguish between these two types of decisions is to arrive at some classification of decision-making methods in order to have appropriate decisions.

Programmed Decisions

The concept of programmed decision is important because the ultimate goal of information systems is to provide purely programmed decisions. Many examples of programmed decisions are available in almost any organization, the most familiar being the computation of pay in accordance with union agreement, contract, organization policy or regulation. One of the goals of MIS design is to devise decision rules for the problems that lend themselves to solution by decision rule and the programmed approach.

Non-programmed Decisions

Decisions are un-programmed to the extent that, they are unstructured, new of high consequence or complex or involve major commitments. Advertising budgets, new recruitment decisions, acquisition and merger considerations, board member selection, and similar problems illustrate the non-programmed type of decision, that cannot be automated. Over the years, managers are required to learn and acquire the habit of making decisions based on the problem-solving process of defining problem, identifying alternatives and selecting the best alternative. This process is being followed today and still accepted as good advice for taking non-programmed decisions.

MIS for Decision Making

Future prospects for programming the decisions of the organization through proper design of Management Information System are enormous. There is increase in the automation of programmed decisions to support the Human Resource Information System needs throughout the organization. The decision making concepts for information system design can be related to following three basic considerations.

1. The essential elements in programming a decision is rules followed for the problem to be solved, the decision process to be programmed and the process for which information required.
2. Management Science includes operation research, associated mathematical tools, and the scientific approach to solve problems which provides methods and techniques to design decision rules.
3. The computer is a fantastic device for processing information and making programmed decisions according to predetermined decision rules.

Information System Design

The objective of information system design is related to information production process by which the computer automatically makes decision. This process is completed by taking the following steps.

1. Analyzing the problem by means of management science approach
2. Designing decision rules to solve all applications required
3. Programming the decision rule for the computer processing
4. Developing the input and output of the computer information system to provide for automated decisions by the computer

Design of Decision Rule

Decision rule for programming or automating decisions can be designed by the utilization of management science techniques and a general procedure for having decision rules in complex situations. This procedure includes following rules.

1. Identify and formulate the manager's decision in writing
2. Find out the constants, parameters and variables involved

3. Select the variables that appears to be most influential
4. Distinguish between controllable and uncontrollable variables
5. State verbal relationships among the variables, based upon known principles
6. Perform symbolic manipulations solving systems of equations

Decision-Assisting Information Systems

This system concentrates on the information required by the manager as decision-maker. This information may be furnished independently or in an interactive sense where there is a man-machine relationship in a problem-solving network.

This vital type of system has the following characteristics and outputs.

1. Some outputs are decisions as the computer made decision according to programmed decision rule
2. Some outputs are secondary information in the form of reports to be used by a subsequent human decision maker
3. The methods of management science can be utilized in both types of systems for the design of decision rules
4. There are provisions for man-machine type interactions in the sense that the manager or decision maker can model the decisions prior to commitment
5. Optimum solutions are provided by management science decision rules Use of Human Resource Data

All organizations should have a number of committees that received or considered Human Resource information on a regular or ad hoc basis, including Governing Boards, Executive management committees, and Human Resource committees. The range of HR issues considered by the committees varies. This includes recruitment and selection, performance management, workforce planning, workforce diversity, learning and development, absenteeism, leave, turnover rates and exit surveys, and capability frameworks. Where the relevant data had been captured by the HRIS, most of the HR data presented at these meetings was sourced from the HRIS. However, as noted earlier, this was not always the case and shadow HR systems were very common in the organizations. In such cases these systems were often the source of data. There was evidence that committees were using this information to monitor progress in a number of key areas and to make some decisions regarding operational strategies to be pursued by the organization.

Learning and Development

Although learning and development is a common agenda item discussed by committees, only one used its HRIS to record and report on learning and development activities. This was despite the fact that all of the HRISs examined as part of the audit had the capability to record a significant amount of learning and development information. For two of the four organizations examined, information recorded was maintained on one or more shadow systems.

HRM Needs Analysis

Human Resource Management (HRM) is required for an organization to provide the benefits available from managerial and operative functions. All human resource managers are supposed to perform both the functions. HRM needs relate to every aspect of the way in which the organization interacts with its people, e.g. by providing training and development opportunities, appraisal to find out about individual needs for training and development.
Human Resource Management

The concept of Human Resource Management (HRM) in the public sector has evolved since the 1980s. HRM is now recognized as an important management tool, as it supports one of the key resources of an organization. Traditionally, managers see the human resources function as primarily one of administrative processing. However, the focus of human resource has now widened to a broader, more strategic role. HRM is now seen as having two dimensions: **operational HRM**, which includes basic human resource processing tasks such as pay, recruitment, leave processing; and **strategic HRM**, which involves delivering those services, in a way that directly supports the implementation of organizational strategies.

Strategic Information Needs

To achieve the organizational objectives, efficiently and effectively, it is important that management at different levels in an organization has access to appropriate information, including human resource information, to enable it to make informed decisions. Ideally, government objectives should be driving an organization's strategic directions, including the human resource initiatives adopted by the organization.

This, in turn, should be determining the human resource data that is collected, analyzed and reported. The organizations should report human resource data monthly, quarterly or six monthly to executive management committees as part of a consolidated

package of management information. However, although there may be some exceptions, regular human resource reporting is generally limited to basic operational data such as staff commencements and separations, staff numbers by divisions / regions, and leave balances. Sometimes this is supplemented with additional data such as various types of leave taken.

Operational Information Needs

It is important that not only executive management should have access to human resource data but that line managers should also have access to human resource data relevant to their sphere of responsibilities. It is noted that the reporting functions of the human resource information system are complex and complicated to provide required information. Documentation defining the information required for basic regular monthly reports, such as payroll expenditure, should be generally apparent in the organizations.

Documentation and Communication of Human Resource Policies

Human resource policies, procedures and guidelines should be located on the organization's intranets, thereby giving all departmental officers access to the policies and procedures. Displays on intranets are usually supplemented with hard copy circulars, forms, checklists, templates, and guidance material to assist users when entering data, and also to assist in the completeness, accuracy, and management of information. The organizations tend to communicate policies and procedures through their intranets. It is also important for the organizations to ensure that information on the intranet is up-to-date, as documents are generally only reviewed when they are considered a priority topic.

Managerial Functions

The basic managerial functions include planning, organizing, directing and controlling different human resource related activities. All these functions are to be coordinated effectively through appropriate human resource information system followed in an organization.

Operative Functions

The following operative functions are entrusted to the Human Resource Department to perform various works efficiently by taking proper decisions on the basis of Human Resource Information System.

1. Staffing & Employment
2. Training & Development
3. Wage & Salary Administration
4. Work Culture & Environment
5. Security & Welfare Activities
6. Employer & Employee Relation
7. Records & Statistics
8. Promotion & Transfer
9. Integration & Separation
10. Retirement & Retrenchment
11. Legal Compliance & Government Reporting

Internet

The Internet has become has become a major force for change in human resource management. HRM system can be involved for recruitment of employees through developed website of the organization. Companies are also using commercial recruiting services and database on the world wide web, posting messages in selected Internet news groups and communicating with job applicants by Internet E-mail. The Internet has wealth of information for the employers and prospective employees.

Intranet

Intranet technologies allow companies to process HRM applications over their corporate intranets which allows the HRM department to provide information service to their employees. The concerned HRM department can provide around the clock services to large number of customers. There can be faster dissemination of information for timely action through appropriate decisions. Intranets can collect information online from employees for input to their personal files.

Employees can easily download instructions to get the required information. Human resources are the people that work for an organization, and human resource management is concerned with how these people are managed efficiently. However, the term Human Resource Management (HRM) has come to mean more than this because people are different from the other resources that work for an organization. People have thoughts and feelings, aspirations and needs. The term HRM has thus come to refer to an approach, which takes into account both:

1. The needs of the organization
2. The needs of employees

Different individuals have their own needs and aspirations. HRM therefore involves finding out about the needs and aspirations of individual employees, for example through the appraisal process and then creating the opportunities within the organization and outside the organization for employees to improve themselves.

Information Needs in HRM

A very sound information base is required for planning and control of human resources. Human Resource Management needs are related to various information for the following functions.

1. Procurement function
2. Development Function
3. Compensation Function
4. Maintenance Function
5. Integration Function

The computerized human resource information system needs following important information for efficient management of the employees working in different organizations.

1. Recruitment information
2. Personnel information
3. Manpower planning information
4. Training information
5. Health information
6. Appraisal information
7. Payroll information
8. Placement information

Training and Development Needs Analysis

There should be analysis of the opportunities and experiences that are required for individuals to train and develop in order to meet organizational and personal objectives. A training and development plan can then be created to set out how these needs can be

addressed in practical steps. HRM needs are related to provision of training opportunities and courses for individuals to develop skills, knowledge and attitudes that help the organization to achieve its objectives. For developmental needs there should be provision of opportunities and courses for individuals to develop skills, knowledge and attitudes.

Concept and Mechanics

The management of different organizations should carefully understand the concept and mechanics relating to human resource information system.

Concept

The concept of Human Resource Management Information System is veering around federation of sub systems developed and implemented as per requirement confirming to the overall plan. Thus rather than a single general Human Resource Management Information System , an organization should have some required types of information system to serve managerial needs in various ways. Human Resource Management relates to various managerial activities of organization which provide opportunity for maximum employee contribution under healthy working conditions, promote individual development and encourage mutual confidence in between employer and employees. Human resource management is required for maximum contribution of individuals and groups working in the organization for effective achievement of organizational goals through proper information system.

Mechanics

The Human Resource Management (HRM) mechanics relate to the computer based management information system. The internet and intranet facilities are very much helpful for collection, record, process, and information analysis to increasing efficiency of human resource management.

Software and Operating System

Software is a set of program. Procedures and related documents associated with a computer system. A program is a coded set of instructions that interprets the information provided to computer with the keyboard or mouse and then direct to carry out the required task. The operating system gets the computer running and controls the operation of the computer activities. It manages the entry, flow and display of software to and from each part of the computer system. The disc operating system is the interpreter between the user

and the computer. The instruction fed through the keyboard by the user is converted into digital signal into the system circuitry and the instruction is processed to display resulting output on the screen.

Standard Software and Customised Software

There is a distinct difference between American and European software providers: US vendors dominate the market for standardized software, whereas their European counterparts focus on customer-orientated applications. In South Africa, vendors and user organizations alike source software from both territories, with the result that the state of these markets has a direct impact on the economic fortunes.

US companies specialize in standard software because they have maximum interest in gaining a monopoly for their applications through economies of scale. European companies, on the other hand, specialize in services and system integration. They have learned to form alliances with all types of companies along the value-added chain. Today, with their knowledge, they are in a position to work in a customer-orientated fashion. Instead of forcing the customer to use a standard, they meet the customer's needs. The software industry consists of two different markets - the **primary sector of software companies** and the **secondary software industry** that has led to new business models in many sectors of the economy. They develop packaged software, standardized applications and system software for standardized customer requirements. Furthermore, there are thousands of small and medium sized companies in Europe and South Africa with selected customers that develop and sell applications, which are customized for individual customer needs. Software is a real engine for innovation in this area. The last major wave of implementing standardized solutions is the turn of the new millennium. Since then, companies' budgets for new IT projects have dropped drastically, even while their demands for information technology have grown considerably. Today's customers want to protect their investments. They require a single view of all information relevant to the company. They must be able to call up their information in real time, so that they can react flexibly to markets that are growing more quickly all the time. This can be achieved only if existing applications are integrated and modernized. Providers must offer their customers integrated applications that are customized for their needs, which are developed in close consultation with the customers. A commercial enterprise's competitiveness depends on its ability to innovate. Companies must be able to react ever more quickly to increasing corporate demands, such as short product lifetimes and greater innovation speed.

Therefore, companies that face this competition need operational application software that is customized for them and their market. At the same time, providers of

operational system software must continually modify their software to meet the market's changing demands. This is true for applications involving such sectors as e-government and online banking, as well as for products customized by customers who place their orders via the Internet. Users need customized software that makes it possible for them to innovate with their products, processes, and collaborations, and that develops with the customers. Standardized software can do this to only a limited degree.

HRIS-An Investment

Cost incurred for information on location, selection and training of employees are the capital components of investment in Human Resource Information System. These are similar to purchase or installation cost. The investment in HRIS can be related to various cost involved in recruitment, selection, hiring, placement, training and development of employees in different organizations. The HRIS continues to provide return on investment through increased reporting and data analyses. Human Resource Information Systems (HRIS) range from basic programs that automate business processes such as payroll, through to the most advanced learning management and performance management. This may represent a significant investment for any organization, costing from thousands to literally millions of dollars in capital and implementation costs.

Self Assessment Questions

1. Identify the various types of users/customers of an HRIS.
2. What are the Information Processing & Control functions for a HRIS manages?
3. Design a flowchart of any HRIS function
4. Explain the different types of data storage techniques.

CASE STUDY

Vignette Revisited

This case is revisited with some additional information that involves the understanding of the material in this chapter. The additional information will be added to the situation described in the vignette at the beginning of this chapter.

A billion dollar retailer with 4,000+ stores finds that it cannot move fast enough to beat the competition. The organization's senior management arrives at the conclusion that

it would be easier to achieve the strategic goals enumerated by the board of directors if the various organizational functions would share information. Shared information would enable them to develop and deploy new actions and tactics more quickly. The CEO and the President have therefore ordered the major functions to immediately update their information systems so that data sharing is possible.

The senior vice presidents (SVP) of accounting and human resources immediately decide that the only solution is to jointly decide on an ERP product. ERP software applications are a set of integrated database applications, or modules, that carry out the most common business functions, including human resources, general ledger, accounts payable, accounts receivable, order management, inventory control, and customer relationship management. To speed the installation along, they will install it using a rapid implementation methodology that a company down the street used. The goal is to have the new systems operational in 9 months. Shortly after this decision has been made, the SVP of HR calls you into his office and tells you that you will be management sponsor for this project. You have to decide on everything.

You sit back in your nice office and think, what's the problem with this scenario? It shouldn't be difficult to select a vendor and then borrow the methodology from down the street. It worked for them, it should work for us! We'll call a few vendors in the morning and find out about cost, time frame, and implementation methods. In the meantime, I should find out a little more about how to do this and who will be using it. I remember from my information systems class in college that this is a reasonable first step when it comes to buying software.

What do you think your response would be to this inquiry? As you go through this material, keep this vignette in mind and see if your answer changes.

New Information for the Case: Part 1

After some discussions with department heads from all the departments in the organization, you realize that there are a large number of people (stakeholders) who will be affected by the new systems. Furthermore, you come to realize how important HR data really are to these stakeholders. Based on this information, you think, Wow, there are far more people who could be potentially using this information system than I expected. The old textbook and the vendor information should provide a lot to think about! Using the information from the section of this chapter titled HRIS Customers/Users: Data Importance, please answer the following questions:

1. Identify some of the customers who would be logical members of the implementation team and explain why.
2. Think through an HR process and sketch out what data are necessary to complete your sample process well. How much history does the organization need to convert to continue functioning?
3. Pick one area of the HR function (e.g., recruiting), and make a list of processes that will need to be mapped and possibly reengineered during this implementation.

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UNIT - III

Unit Structure

Lesson 3.1 - Man Power Planning

Lesson 3.1 - Man Power Planning

Learning Objectives

After reading this chapter, you should be able to understand

- To know the Modules on HR Planning, Recruitment, Selection, Placement.
- To know the Module on Performance Appraisal System.
- Understand the Training & Development Module
- Understand Information System's support for planning & control.

Introduction- Modules on HR Planning

Many business owners prepare a business plan before starting their business. However, small business owners often do not include human resource planning as part of their over-all business plan. They may start out with only a few employees or none at all. Over time, it is important to properly forecast employment needs. Just as failing to address potential threats in the marketplace can jeopardize the viability of your business, failing to anticipate personnel needs may impact on overall business success. The success of a business is directly linked to the performance of those who work for that business. Underachievement can be a result of workplace failures. Because hiring the wrong people or failing to anticipate fluctuations in hiring needs can be costly, it is important that you put effort into human resource planning. Planning for HR needs will help to ensure your employees have the skills and competencies your business needs to succeed. An HR plan works hand in hand with your business plan to determine the resources you need to achieve the business's goals. It will better prepare you for staff turnover, recruitment, and strategic hiring – and alleviate stress when you have emergency/last-minute hiring needs. This module provides a detailed outline of how small business owners can develop a human resource

plan. There is also a discussion of issues to consider when developing a succession plan, the plan that is needed to consider how to carry on the business, or sell the business, when the current management/ownership leaves. Tips for creating a personnel policy manual are also included. According to Geisler, "HR planning is the process – including forecasting, developing and controlling – by which a firm ensures that it has the right number of people and the right kind of people at the right places at the right time doing work for which they are economically most useful".

According to Wendell French, human resource planning may be defined– "as the process of assessing the organization's human resources needs in the light of organizational goals and making plans to ensure that a competent, stable work force is employed".

According to E.W.Vetter, human resource planning is "a process by which an organization should move from its current manpower position to its desired manpower position. Through planning, management strives to have the right number and right kind of people at the right places at the right time, doing things which result in both the organization and the individual receiving maximum long-run benefit".

Leon C Megginson is of the opinion that, human resource planning is "an integrated approach to perform the planning aspects of the personnel function in order to have a sufficient supply of adequately developed and motivated people to perform the duties and tasks required to meet organizational objectives and satisfy the individual needs and goals of organizational members".

The Human Resource Planning has the following modules:

[How many employees do we have to hire, train or promote this year?]

Manpower Planning…headcount analysis, turnover, and organization charts

The Manpower Planning module manages the employee inventory and handles a number of related issues, including: Maintaining an inventory of the number of required job positions by Branch, Department, and Section based on the organization's manning objectives.

- Calculating actual head count and determining variance between required and actual
- Providing interface to third-party applications such as OrgPlus and Visio for printing organization charts
- Calculating turnover for the current base period

- Projecting turnover for a future period using past results
- Including retirement projections to determine future vacancies

The daily demands and hectic lifestyle of business owners and managers often has an unfortunate by-product: human resource planning gets placed on the bottom of the list of things to get done. Failure to anticipate potential changes in your workforce often leads to last minute or "crisis mode" decision-making. Needless to say, quick fixes are no solution to long-term issues. Taking the time to forecast future hiring needs today will save you time and money in the long-run. HR planning must be tied to the overall business plan. You can start the process by assessing the current conditions and future goals of your company. Perform these assessments regularly.

Consider some of the following questions:

- What are the company's goals and objectives?
- Do these goals call for expansion into new markets?
- Are new product lines planned?
- Are changes in technology necessary to stay competitive?
- Will new skills and/or training be required to meet the company's goals and objectives?

The following three-step method is designed to help you determine whether or not you are ready to hire:

1. Identify Business Strategy and Needs
2. Conduct a Job Analysis and Write a Job Description
3. Determine the Feasibility of Hiring

Step 1: Identify Business Strategy and Needs

Identify Pressures and Opportunities

Consider the following internal and external opportunities and record how they may impact your business:

Competition: Often businesses will feel pressure to expand and hire more workers in order to remain competitive in a particular market.

Technology: Technological advancements may increase the demand for employees in certain industries or professions.

Increased customer demand: An increased demand for products or services may require more resources to help produce or deliver services.

Economics: Growth of the economy or lower interest rates cause increased spending, and often increased business opportunities. Changes in the labor market impact your ability to find and keep employees.

Workforce changes: These include resignations, terminations, leave of absences, death, change in employment status, and retirement.

Clarify your Business Strategy and Direction

Describe what your business does in terms of key functions and tasks and then describe the changes that will come into play and the direction that the business will likely take in the next few years. If you expect to increase sales by 50% over the next five years, consider what impact that will have on your hiring needs. If you are a start-up company, consider the different sorts of employees you will need at each stage of development. Identifying your business goals and needs will help you to predict future hiring needs, in terms of the number of employees, types of skills, and work experiences. This planning process will help you to avoid making mistakes – like hiring an employee prematurely.

Identify Aspects of the Business that Need Help

Once you have developed a sense of the direction your business is taking, you need to determine what human capacity your company will need in order to accomplish those goals. Identify aspects of the business that need help, and the skills and knowledge required of a new employee. When you are hiring, look for a person who has a particular set of skills – not a particular person to fill a particular job

The following questions will help you determine how many people are required, and with what skills, to fulfill your business needs.

- What new positions are opening up?
- What special skills (e.g. computer applications) will be needed?
- What work experience (e.g. in a particular area) will be required?
- When will new staff be needed?
- When should hiring be scheduled to ensure a smooth transition?
- Does the hiring plan also provide for employee turnover and attrition?

Step 2: Conduct a Job Analysis

If you decide that you need additional employees to fulfill your business strategy, it is recommended that you conduct a four-step job analysis:

1. Review your Current Workforce

Describe the employees you now have in terms of their knowledge, skills, and experience and describe how they function together to get work done. Map these onto your strategic plan and describe the skills and knowledge that you will need for the anticipated new work or function. At the same time, consider how the current work could be reorganized to make the best use of current and future employees.

2. Identify any Skills and Knowledge Gaps

Note any gaps between the skills and abilities your current employees have and the skills and abilities that your workforce needs to meet your business objectives in the future.

To ensure that you have considered the full scope of the new position from all different perspectives, ask your current employees what they think this position would involve. The checklist below might help you identify the desired attributes of potential employees.

3. Write a Job Description

After completing steps one and two, you can begin to draft a job description. Although many small businesses do not take the time to draft job descriptions, it is a worthwhile exercise. See Module. Hiring Strategies for a detailed explanation on how to write a job description.

4. Set an Appropriate Salary

Start by adopting a general salary range to help you determine what you will need to budget – and whether potential candidates are within your budget. You may want to complete a job evaluation, whereby you rank jobs and their corresponding salaries. Weigh the importance of critical skills and knowledge for each position, compare positions, and rank the new position on the pay scale accordingly.

If you already employ an administrative assistant and plan to hire another, you will probably pay him/her approximately the same rate, depending on experience. If, on the

other hand, you decide to create a new position and recruit an employee with a unique skill set, you will need to do a comparison between the new and existing positions.

- Is the new position more junior/senior?
- Will the new position require more specialized skills and knowledge?
- Will the position have more complex tasks and different working relationships?
- Will the new position have more or less responsibility?

The external market is another useful resource for determining salary. Look at similar positions in other organizations by checking job postings on the Internet, talking to others in the industry, reading career ads in the newspaper or purchasing salary surveys.

Step 3: Determine the Feasibility of Hiring

Before you hire, you must understand (1) the costs of hiring, (2) the benefits of hiring, and (3) the risks of not hiring.

(1) When calculating the full cost of hiring a new employee you must consider:

- Labor costs, such as salary and benefits
- Recruiting costs, which may include advertising in addition to time spent on recruiting activities, orientation and training.

(2) Weigh the costs of hiring against the value of having an employee contributing to the business. Potential benefits include:

- Improved morale of other employees, if a departing employee was a problem or if the area has been understaffed for some time
- Improved morale of existing staff if the growth means new business and opportunities
- Improved productivity if a departing employee was not productive or if employees believed that you have made the decision to hire as a result of their input
- Increased revenues once a new employee is performing at an acceptable level
- A new employee who is more qualified than current employees can help train the existing employees
- Increased customer satisfaction and potentially saved business

(3) Some of the potential risks associated with choosing not to hire despite the need for additional staff include:

- Loss of revenues because of an inability to keep up with demand
- Loss of employees because they are unwilling to continue being overworked or to do the work of a departed employee
- No new ideas or knowledge brought in through new employees

Employment Arrangements

Once you have determined that hiring new staff is desirable and feasible, you must decide what type of employment arrangements would best suit your company. Consider the following questions:

- Are there candidates in-house or is an external search required?

When mapping out your HR requirements for the coming months or years, determine whether or not any of your current employees might be suitable for these newly created positions.

- Will training be provided, or will candidates be required to have the skills needed for the position?

Training is often required when a particular skill is needed or there is a shortage of qualified people. Many companies prefer to hire people who already have the skills in order to avoid training costs.

- Will the position be full-time, part-time, or contract?

Your decision to hire full-time, part-time, seasonal, temporary, peak, contract employees or independent contractors should depend primarily on the type of work and the timing of the work.

You should also consider the payment structures; full-time employees are more likely to require benefits than part-time and contract people.

Succession Planning…providing adequately trained and qualified personnel at all levels

While the Manpower Planning module provides quantitative forecasting, when combined with the Succession Planning module, they provide a forecasting tool that may be used to predict the number of people the organization will have to hire, train and promote in a given period. Succession Planning provides more qualitative features.

[How many employees with appropriate qualifications (education, skills and training) will be available for promotion to management type jobs this year? Who in our present work force is qualified today to be considered for an opening as a marketing manager?]

Perhaps the greatest benefit of an integrated human resource and payroll system is the instant, on-demand access to information you need to make decisions quickly. By enabling authorized personnel to instantly lay their hands on detailed applicant and employee information, HRM2001 helps your organization work smarter, faster, and more efficiently. For example, Succession Planning's capability helps you instantly scan your pool of applicants, as well as internal resources, to match qualifications to open positions. Not only does this make it easier to find the right candidate for the right position, you may also identify potential skill shortages in your workforce, enabling you to proactively train and hire for future skill requirements. The prime objective of Succession Planning is the provision of adequately trained and qualified personnel to meet the future staffing needs of the organization. Accomplishing this requires a quantitative and qualitative understanding of the past and planning for the future. The Manpower Planning and Succession Planning modules deliver in this regard.

Job Requirement

One of the pre-requisites of Succession Planning is the maintenance of job position data. This requires entry of information on the education, skills and training requirements of each job position.

Qualification Gap Analysis

This is a HR planning and development feature that may be used by the HR department or at the departmental level. The Dynamic Selection mechanism is first used to select the set of employees for whom the gap analysis will be done.

The Generate Gap function is then used to match the qualifications for each individual against the requirements for the substantive position to which the individual is assigned. Gap data may be displayed on the screen or extracted to a work file. The Extract to Work file feature exports the gap data to an Excel spreadsheet which then provides a

printed copy of the results. Information on employees who are qualified, over-qualified or under-qualified is then available. For under-qualified employees who require training, the integrated Training module may be accessed directly. Employees may then be listed for recommended training to address the identified qualification gaps.

Job Forecasting

Job Forecasting addresses the issues of assessing the potential of employees to fill future positions. It uses current qualifications data of the selected employees and matches against the required qualifications for future positions. The identified gaps determine the training that will be needed to enable employees to meet the required.

Career Paths

Whether employees are promoted within relatively specialized career lines or be given broad exposure to a variety of jobs depends on both the organization's policy and individual choice. It is a function of organizational needs and employee expectations. Within a given organization, its members come to anticipate a certain pattern of job progression based on what they have observed of the internal mobility of other employees. The system provides a facility to display various career paths based on the organization structure. Various career path options may be discussed with employees and graphically illustrated.

Job Search

The Succession Planning module includes a Job Search feature. The vacant position is first selected. The qualification search parameters are then specified and may include any combination of Education, Skills and Training. The system may also be directed to search among certain selected employees and/or applicants (from the applicants' database). With the Search feature, the system searches the target databases and provides a short-list of candidates who meet the stated requirements. Recruitment may then be focused on the shortlisted candidates.

HRMP & HRIS- Modules on Recruitment

The search for new employees is a familiar task for most employers. Employees retire, move, quit, are transferred, or are fired. Businesses restructure, grow, or take a new direction. Regardless of the situation, the end result is the same – you have a job opening to fill. A number of steps must be taken in order to fill a job. First of all, the employer must determine what the job entails. What tasks will this person perform? What skills and

education are necessary? Next, you must decide which recruitment strategy would be most effective to find qualified candidates. Posting a newspaper ad? Using the Internet? Recruiting at schools? It is important to look for potential employees in a number of different places and from a variety of sources.

This module will guide you through the recruitment process, from start to finish. It will cover the following topics: how to write job descriptions, how to access the workforce, and how to diversify your workforce. The search for new employees is a familiar task for most employers. Employees retire, move, quit, are transferred, or are fired. Businesses restructure, grow, or take a new direction. Regardless of the situation, the end result is the same – you have a job opening to fill.

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The quality of an organization's human resources depends on the quality of its recruits. Recruitment is the process of finding and attracting capable applicants for employment. The process begins when new recruits are sought and ends when their applications are submitted. The result is a pool of applicants from which new employees are selected.

Managers become involved because they want the best people they can get, and they often know about places where appropriate applicants can be found. However, in large organizations, specialists in the recruiting process, called recruiters, are often used to find and attract capable applicants. Recruiters identify job openings through HR planning or requests by managers. The HR plan can be especially helpful because it shows the recruiter both present openings and those expected in the future.

Advanced knowledge of job openings allows a recruiter to be proactive. Once openings have been identified, the recruiter learns what each job requires by reviewing the job analysis information, particularly the job descriptions and job specifications. Recruiters also may supplement their knowledge about a job's requirements through talks with the appropriate manger.

Human resource recruitment refers to any organizational activity that is designed to affect

(1) The number of people who apply for vacancies,
(2) The type of people who apply for them, and/or
(3) The likelihood that those applying for vacancies will accept positions if offered.

The goal of an organizational recruitment program is to ensure that the organization has a number of reasonably qualified applicants, who could be chosen when vacancies occur. The goal of the recruiting is not simply to generate large numbers of applicants. If the process generates a sea of unqualified applicants, the organization will incur great expense in personnel selection, but few vacancies will actually be filled.

The goal of personnel recruitment is not to finely discriminate among reasonably qualified applicants either. Recruiting new personnel and selecting new personnel are both complex processes. Each task is hard enough to accomplish successfully, even when one is well focused.

The Recruitment Modules Include Following

The recruitment module simply defines the whole recruitment process which will be carried out in an organization. The bulky, methodical manual recruitment procedures have been changed into a flexible, user friendly, efficient, comprehensive recruitment engine which can be easily embedded into your companies' website or information channel. Recruitment Module which comprises of the comprehensive job application, publishing and recruitment process, according to the feedback, received from user community side, were the main focus of the release.

Features of the new application version include:

- **Listing out the Job Vacancies**

This is where the HR administrator creates the job vacancies available in the organization. He has the option to include all the necessary information, including the job title, the job description and pay grade and employment status.

- **Adding Pay Grade**

When listing the available vacancies the HR administrator has the option to add additional pay grades to the system to be compatible with the job listing.

- **Adding Employment Status**

Generally the system itself has defined certain employment status at its inception. But if the company needs the HR administrator has the right to add company specified Employment Status to the system when listing out the job vacancies.

- **Selecting Hiring Managers for the Job Vacancies**

It's compulsory for the HR administrator to select the hiring managers for each job vacancy listed out. This will let the hiring manager receive a notification when someone applies for the particular job that he/she has been appointed as the hiring manager.

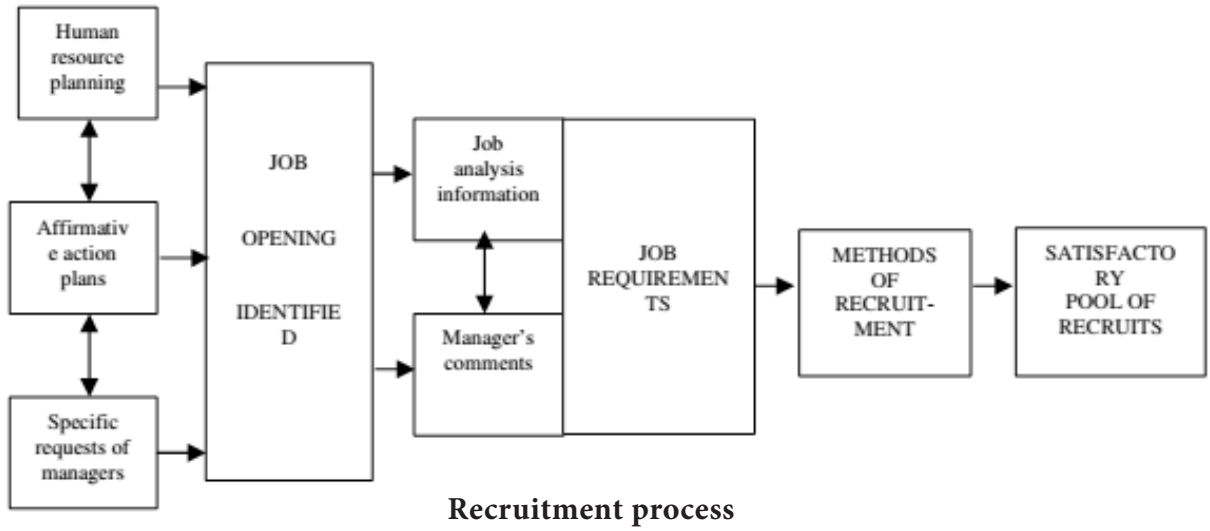
- **Candidates Start Applying for the Job Vacancies**

The only thing involved in the application process is to select the job and fill up a form containing all the necessary details that are required. The process is very simple and user friendly through web process.

- **Candidates Start Applying for the Job Vacancies**

The HR administrator can get the full list of applicants for each job and he can schedule interviews for the right people with the respective hiring managers and other executive members. Every action will be notified to the respective candidate via email or communication channel.

The recruitment process is illustrated in the following diagram.



Recruitment process

Job Descriptions

Laying the Groundwork

Before moving forward, you can put the job under a magnifying glass to gather all the information you need about the position. What activities will this employee are involved in? What skills are necessary to do the job successfully? What level of education and/or training will be needed? This investigation will help you develop a more precise idea of what you're looking for in a new employee. You may find that you are quite familiar with the position being offered and are able to simply re-use the same job description as you have used in the past. However, it is often a good idea to take the time to make sure you fully understand what the job involves. The following Work Description Form may help you determine the exact duties, responsibilities, and performance standards required for the position. After jotting down the daily "nuts and bolts" of the position, you must decide what sort of education, experience, and personality traits the job applicants must have. Be realistic. Don't make your personal preferences into job requirements. This will limit the number of candidates you have available to you.

Job description form

Recruitment Constraints and Challenges

The most common constraints and challenges faced by recruiters include –

1. Strategic Human Resource Plans
2. Affirmative Action Plans
3. Recruiters habits

4. Job Requirements
5. Costs
6. Incentives
7. Organizational Policies
8. Compensation Policies
9. Employment Status Policies.
10. International Hiring Policies.
11. Promote-from-within Policies.

1. **Strategic Human Resource Plans**

These plans point out the direction of the firm and suggest the type of tasks and jobs that need to be undertaking. HR plans outline which job should be filled in recruiting outside the firm and which are to be filled internally. Internal placements are much less costly and time consuming than external recruitments, although the available pool of recruits is limited. When external recruiting must take place, bunching up similar jobs for college recruitment trips or advertisements can be cost effective techniques.

2. **Affirmative Action Plans**

Equal employment opportunities and the legislation governing it guide the recruiters in recruiting certain categories of recruits. The employers should be well informed of these implications and the recruiters need to prepare affirmative action plans to ensure justice to all sections of recruits.

3. **Recruiters Habits**

Recruiter's past success can lead to certain habits. Admittedly, habits can eliminate time consuming decisions. But habits may also continue past mistakes or avoid more effective alternatives. Recruiters must guard against self-imposed constraints in the form of habits. Environmental conditions, The unemployment rate, spot shortages in specific skills projections of the labor force by the Department of Labor, Labor laws, and the recruiting activities of other employers all affect recruiters' efforts.

Although these factors are considered in HR planning, the economic environment can change quickly after a plan is finalized. To be sure that the plan's economic assumptions remain valid, recruiters can check three fast changing measures.

(1) Leading economic indicators,

(2) Predicted versus actual volume of business,

(3) Want-ads index.

4. **Job Requirements**

A study of the Economic development Committee found that specific vocational skills are less crucial than is a high level of literacy. In addition, a responsible attitude towards work, the ability to communicate in English, and the capacity to learn were all found to be important. To find the best and most experienced applicant is a constraint that is often imposed on recruiters. One problem is recruiters' ability to locate good candidates. If high level of experience is not necessary, the recruit may become bored with the job. If intensive experiences unneeded, experience may be an artificial job requirement. Another problem is cost. People with greater experience usually require a higher salary than do less experienced people. Besides, for some people in some jobs, ten years of experience is another way of saying one year of experience repeated ten times.

5. **Costs**

The cost of identifying and attracting recruits is an ever-present limitation. Careful HR planning and forethought by recruiters can minimize these expenses. Of course the best solution is to use proactive HR practices to reduce employee turnover, minimizing the need for recruiting. Evaluating the quantity, quality and costs of applicants helps ensure that recruiting is efficient and cost effective.

6. **Incentives**

Incentives may be a constraint. Common sense suggests that employer will have to become more proactive. Recruiters also will have to develop more of customer service attitude in dealing with recruits. They will have to keep applicants better informed, schedule interviews at the applicant's convenience, and minimize the number of return interviews. Higher pay and benefits will be important too.

7. **Organizational Policies**

Organizational policies are used to achieve uniformity, economies, public relations benefits and other objectives that may be unrelated to recruiting. The policies that may affect recruitment are highlighted below.

8. **Compensation Policy**

Pay policies are a common limitations faced by recruiters. Recruiters seldom have the authority to exceed the stated pay ranges of the organization. Of course, international openings and special or additional assignments entail additional/increasing salary package.

9. **Employment Status Policies**

Some companies have policies on hiring part time and temporary employees. Although there is growing interest in hiring these types of workers, policies can cause recruiters to reject all but those seeking full-time work. Limitations on part-time and temporary employees reduce the pool of potential applicants, especially since this segment of the workforce is a fast-growing one.

10. **International Hiring Policies**

Policies also may require that foreign jobs be staffed with local citizens. The use of host-country foreign nationals reduces relocation expenses, lessens the likelihood of nationalization. If top jobs are held by local citizens, minimizes charges of economic exploitation. Foreign nationals are apt to be involved in the community to enable them to understand local customs and business practices.

11. **Promote-from-Within Policies**

Promote-from-within policies give present employees the first opportunity for job openings. These policies may limit the recruiter in several ways. They may require the recruiter to search within the company before looking elsewhere for recruits. If an internal search must be completed before recruiting outside the firm can begin filling job openings will be delayed when internal candidates are unsuitable. Even if internal candidates are acceptable, the pool of potential applicants is likely to be smaller than is the case when internal and external channels are used. Hard choices often must be made when internal recruitment involves the eventual selection of one coworker in preference to another, attendant morale and motivation issues may surround such decisions.

HRMP & HRIS- Modules on Selection

The search for employment can be a long and frustrating experience for many job-seekers. Equally frustrating for employers can be the search for quality employees. This frustration can be compounded by time delays and cost implications when mistakes are made

in employee selection. Just as jobseekers utilize supports to move to sustainable employment, employers require support to find, hire, and keep good employees. Employment can be viewed as an equation with successful employment being the result of adding job seekers and employers together. To achieve successful employment, it is necessary to support and address both sides of this equation.

Job-Seekers + Employers = Employment

This module presents information and tools to support employers who are faced with position vacancies. The module takes a step-by-step approach to position assessment, recruitment, and selection. The following stages will be addressed in the module:

- Review the position that is vacant;
- Decide if recruitment for the position should proceed;
- Determine the requirements of the position;
- Develop an effective application process; and
- Develop an effective selection process

The Decision to Recruit

The first step in filling a vacant position is to assess whether the position actually needs to be filled. A vacant position is always an opportunity for an employer to investigate the need for change. It is much easier to make changes to an employment position when it is not filled. Changes can be made without having to manage a current employee or having to address issues of compensation and/or severance. Prior to filling a vacancy, it is wise for an employer to take the time to review the vacant position and make a conscious decision about whether it should be filled or not. A position vacancy does not always mean that the position must be filled and it certainly does not require that the position be filled to function in exactly the same manner. A review of many factors can occur prior to recruitment so that the employer can make the most effective hiring decision. It could be done through given steps:

a) SWOT Analysis of Company and Vacant Positions

Strengths and weaknesses are internal factors that apply to the particular position under review, while opportunities and threats are external factors that would apply to other employment positions and to other employers. The internal analysis provides the employer with an opportunity to assess what company strengths and weaknesses will be addressed by

the position. For example, will the new employee build on the primary areas of company business or will it explore the potential to build new business. Analyzing company strengths and weaknesses will help to determine the type of employee characteristics and skills that are needed to balance and advance the company's human resource capacity. A position weighted more in strength should require less change or alteration.

a) **Re-Organization or Re-Alignment Options**

Prior to recruitment, it is also valuable for an employer to review any possible changes, or necessary changes that could be made with the duties or function of a vacant position. The employer can take this opportunity to review the vacancy within the scope of the entire organization to determine if it should remain the same or if duties should be eliminated, added, or shifted to other positions within the company.

The following examples provide some re-organization considerations:

- Have there been any other recent structural changes to other positions, and if so, do those changes impact on the vacant position?
- Is there an opportunity for economies of scale by eliminating this position and having the necessary functions absorbed by other positions?
- Are there other positions, recently vacated or soon to be vacated, that would create a critical mass of vacancies that would warrant a larger scale organizational review?
- Would it be useful to have the functions of this position re-align under a different operational group within the company?

c) Decision

After completing an external and internal review, the employer has the information and knowledge to make an effective decision about vacant positions. The employer will decide between the following options.

1. Maintain the position in its current form and recruit a person similar to the predecessor.
2. Alter the position's function and requirements and recruit a person with a new set of skills and abilities.
3. Eliminate the position; re-align any necessary functions internally, and do not proceed with recruitment at this time.

It is useful for employers to take time to develop profiles of both the vacant employment position and of the company. A good company profile is a useful tool for creating quality job postings, as well as promotional material and websites.

A short company profile inserted within a job posting can add significant context to the vacant position and give job-seekers more insight into the company. This is an excellent opportunity for the employer to "sell" the company to potential jobseekers. A well written company profile is as important to the employer as a well written cover letter and resume are to the job-seeker.

In order to write an effective job description, it is wise to develop a profile of the position. There are two stages to developing a quality job description.

The first stage of the job description will include administrative items such as:

- Job Title
- Department/Supervisor
- Status

  Full Time Equivalency (i.e. FTE is 5 days per week, 4 days per week is 0.8 FTE)

  Term – provide start and end dates

  Seasonal – provide start and end dates

  Casual – provide average hours per week
- Salary Range – which may include the use of broad banding

The second stage of the job description includes more information and detail about the function of the position.

- Primary Purpose - What is the overall reason for the existence of the position?
- Nature of the Work

  How does the position fit into the structure of the company?

  What is the type of work performed?

  What is the nature of the work environment?

  What decision-making is associated with the position?

  Will the person work with others, and in what capacity?

  Will the position operate in a high-speed environment?

  What are the time commitments? Are there shifts? Is there travel?

- Accountabilities and Responsibilities

  What results and outcomes will be expected?

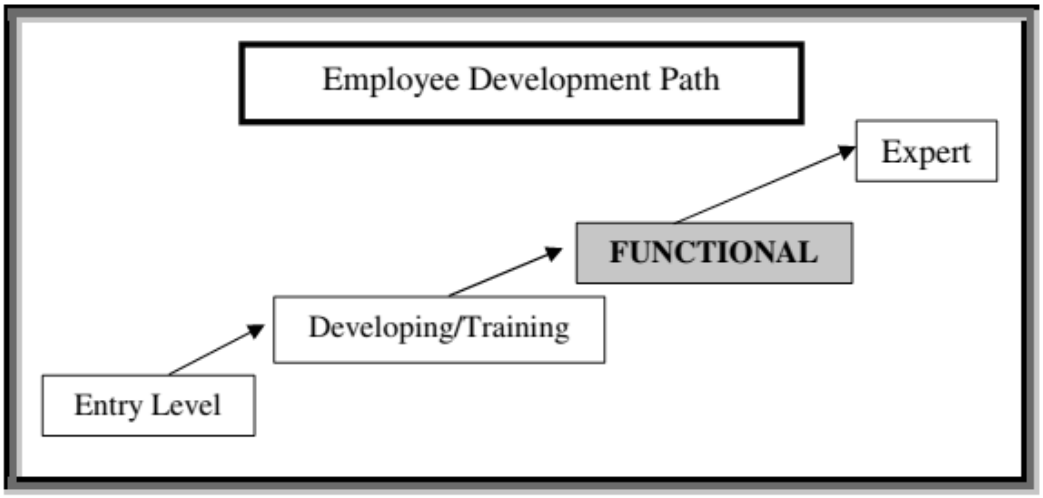
  What will the operational duties be?

  To whom will the position report and be accountable to?

Establishing a Functional Benchmark

When developing a position profile, it is useful to establish a benchmark description of the position. The functional benchmark will document the key requirements that will remain relatively constant over time. A functional benchmark can be defined as the employment requirements that an employee demonstrates once they have been established in a position for a period of time. The functional benchmark describes the level at which an employee functions after they have learned the requirements of a job.

The entry level stage of a position is not an effective point to establish the functional benchmark. An employment candidate will reach the functional level after a period of orientation and training. The time required to get to the functional level will vary depending on the individual in the role.



Employee development path

Employment Requirements

- **Identify Requirements at Functional and Minimum Levels**

Once the functional benchmark has been established, the employer can identify the skills, experience, and knowledge that would be necessary to satisfactorily perform at

the functional level. Most often an employer will not be able to recruit someone at that functional level. Therefore, the recruitment will result in someone who performs at a level below functional. The employer will invest training and development to move the employee to the functional level.

- **Validate Minimum Requirements**

Validating that minimum requirements are required for an employment position is an important step. If time and effort is not placed on this part of the job posting process, employers will see a reduction in the quantity of applications, the quality of applications, or both. Effective job requirement assessment will meet the following objectives:

- Enable employers to access a larger pool of job-seekers;
- Decrease systemic barriers for job-seekers; and
- Increase the success rates of employer recruitment and retention.

Validity is defined as the extent to which performance on the measure is associated with performance on the job. A measure must be reliable if it is to have any validity. On the other hand, reliability can be measured by many characteristics (e.g., height) that may have no relationship to whether someone can perform a job. For this reason, it is said, that reliability is a necessary but insufficient condition for validity.

- **Criterion-Related Validation**

One way of establishing the validity of a selection method is to show that there is an empirical association between scores on the selection measure and scores for job performance. If there is a substantial correlation between test scores and job-performance scores, criterion-related validity has been established. This correlation is referred to as a validity coefficient.

- **Content Validation**

When sample sizes are small, an alternative test-validation strategy, content validation, can be used. Content validation is performed by demonstrating that the items, questions, or problems posed by the test are a representative sample of the kinds of situations or problems that occur on the job. A test that is content valid exposes the job applicant to situations that are likely to occur on the job. And then tests whether the applicant currently has sufficient knowledge, skill, or ability to handle such situations.

CAUTION

- Employers need to answer the question about whether an item is required from their defined minimum entry level, and not from the functional level.

- Avoid creating systemic barriers by asking for education and experience that are "nice" to have but not necessary. Many potential job seekers will possess the required skills and abilities, but may not have the requested level of education (ie. Grade 12). An employer must determine whether either education or experience are actually necessary. If not, these requirements should not be introduced.

- Avoid using requirements as a means to limit the quantity of applications that will be received. Unnecessary requirements will effectively eliminate qualified applicants.

Methods of Selection

1. Bio Data

Bio data refers to biographical information about the candidate. Much of this sort of information is gathered on application forms. Application forms, as with other tools used for selection purposes should be clearly designed so that selectors know how they are going to use the information when it is received. Some organizations use this information to indicate a person's group or individual orientation, or to give added information on leadership ability in example. I was captain of the hockey team). Herriot, Glendinning and Wingrove (1984) found that selecting candidates on the basis of application forms was a haphazard affair with candidates who filled in the while spaces on the form standing a greater chance of selection because filling in the spaces was equated with motivation.

2. Group Methods

Roles

Many organizations are now interested in whether an employee will fit into an existing group. Some organizations are therefore using Belbin's work on team roles (Belbin, 1981) not only to identify what roles exist at present within the team and therefore what is the gap, but also to select a candidate with the required role preference.

Problem Solving

A small group of 6-8 people is asked to solve a work-related problem in a limited period of time. Each individual may also be asked to feed back to the assessors the behavior of a chosen candidate, thus each individual would not only be asked to contribute to solving the problem but they would be required to appraise another individual.

The candidate will be assessed on:

- Problem solving ability in the short and long term/creativity;
- Ability to work well and contribute to a team situation;
- Interpersonal skills;
- Ability to listen, to appraise and assess others;
- Leadership and chairing qualities.

3. In-Trays

The exercise simulates what a manager might find in his or her in-tray and the candidate is allocated a limited period of time - say 30 minutes – in which to go through the in-tray of memos, letters, reports and other documents and to make appropriate written decisions. These decisions or suggested actions will be communicated and explained to an assessor following the event.

The in-tray exercise will typically be assessing:

- Ability to make appropriate decisions when under time pressure;
- To deal with situations appropriately;
- To be aware of the knock-on effect of decisions to other parties;
- Ability to organize and prioritize

4. Presentation

Each candidate is asked to write and present a piece of work to an audience. Typically the presentation will be time limited and on a relevant topic. So, for example, a person applying for a job as a manager of a multinational organization who will be liaising and managing overseas staff might be asked to present a 15 minute paper on:
'Managing Cultural Diversity'

The candidate will be assessed on:

- Verbal and non-verbal presentation skills;
- Relevant content;
- Time management.

5. Work Simulation Exercise

A typical work situation is simulated so that a candidate's ability to do the job effectively can be assessed. The alternative is to rely on what the candidate says they would do in a given situation, but what or how they say they would carry out a piece of work may be very different to what they would do in practice. The candidate is asked to comment on or answer questions which mirror the type of activity which is involved in the job. For example, a prospective senior manager may be asked to comment individually and in writing on last year's financial figures suggesting undertake a typing test, or a prospective television newscaster may be asked to present a piece of news. The candidate will be assessed on relevance of content.

6. Repertory Grid Technique

Kelly (1955) developed the notion of personal construct psychology as a theory of personality, which over the last five years has been developed for use in the selection process. The technique allows the individual to make sense of his or her world by identifying similarities and differences between sets of events in his or her life and in this way develops personal constructs. Anderson (1990) used the technique to elicit constructs, which relate to preferred tasks.

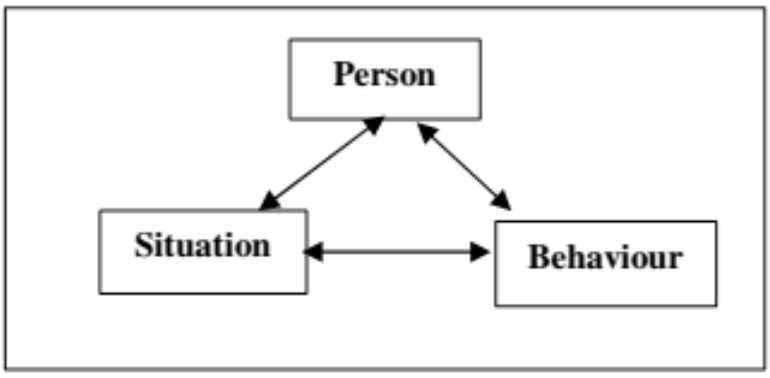
The repertory grid was elicited from a marketing manager and shows distinct clusters: one is a liking for variety, challenge and responsibility for the marketing function and the other is a dislike of closely supervised work, deskbound tasks and advertising responsibilities. Kelly's repertory grid is extremely useful when trying to uncover a

candidate's real motivation and preferences and marks a new and exciting step forward in the field of selection.

7. Personality Assessment

The use of personality questionnaires in employee selection is not an area for the amateur and certainly not an area in which to dabble. Some users of this selection method find it an invaluable tool, others suggest that even to try to define personality is difficult, therefore how can this illusory characteristic be measured? Certainly the word 'personality' is much abused in general use, not least in phrases such as 'film or TV personality'. Only recently a student was overheard to say he was undertaking a personality test to see it I have any'! There are now many psychometric self-report questionnaires on the market, which purport to measure personality. It is possible to measure personality; it must be possible to define it! So what is personality?

Jessup and Jessup (1975) define personality as: That which makes one person different from another and includes all the psychological characteristics of an individual . . . personality is used to describe the non-cognitive and non-intellectual characteristics of an individual. It refers more to the emotional make up of a person and is reflected in the style of his/her behavior rather than the quality of his/her performance.



Relationship among person, situation and behavior

Bandura (1977) questions whether the trait approach to personality, or the situation, explains the behavior. Clearly if personality does not to a large extent explain behavior it may not be very useful to assess personality as part of the selection process. Bandura (1977) suggests that behavior is a result of the person/situation interaction, as illustrated above figure. This diagram suggests that both the personality and the situation determine behavior. So, for example, the individual may have an extrovert personality but decide not to display this characteristic in a particular situation, for example at a funeral.

8. Interviews

A selection interview has been defined as "a dialogue initiated by one or more persons to gather information and evaluate the qualifications of an applicant for employment." The selection interview is the most widespread selection method employed in organizations. Unfortunately, the long history of research on the employment interview suggests that, without proper care, it can be unreliable, low in validity, and biased against a number of different groups. Moreover, interviews are relatively costly because they require at least one person to interview another person, and these persons have to be brought to the same geographic location.

Finally, in terms of legality, the subjectivity embodied in the process often makes applicants upset, particularly if they fail to get a job after being asked apparently irrelevant questions. Fortunately, more recent research has pointed to a number of concrete steps that one can employ to increase the utility of the personnel selection interview. First, HR staff should keep the interview structured, standardized, and focused on accomplishing a small number of goals. That is, they should plan to come out of each interview with quantitative ratings on a small number of dimensions that are observable (e.g., interpersonal style or ability to express oneself) and avoid ratings of abilities that may be better measured by tests (e.g., intelligence). In the words of one experienced interviewer for Johnson and Son Inc., "Gut feelings count, but the goal is controlled subjectivity."

Employment Tests

Employment tests are devices that assess the match between applicants and job requirements. Some are paper-and-pencil tests; others are exercises that simulate work conditions. A math test for a bookkeeper is an example of a paper-and-pencil test, and the account-executive test at Merrill Lynch is an example of a simulation. Tests are used more frequently for candidates for jobs that are paid by the hour than for management openings because hourly jobs usually have a limited number of skills that are more easily tested. A survey by the Society for Human Resource Management found that 84 percent of employers "include testing in their employment decision-making procedures." Management and staff jobs are often too complex to be tested fairly and economically.

Considerable care must be taken in testing foreign nationals whether they are applying for a job in the home country or elsewhere. First and most obvious, the test may have cultural biases, including slang terms that are unfamiliar. Second, laws in other countries may prevent some types of testing. Third, because of cultural differences, social standing, or political connections, taking a test may be seen as an insult. Many employment tests exist but each type of test has only limited usefulness. The exact purpose of a test, its design, its

directions for administration, and its applications are recorded in the test manual, which should be reviewed before a test is used. The chart below gives a brief explanation of several different types of tests and their application.

Application	
Psychological Tests	➢ Measures personality or temperament (executives, nuclear power, security) ➢ Measures personality or temperament (executives, managers, supervisors) ➢ Measures personality or temperament (sales personnel) ➢ Measures logic and reasoning ability (executives, managers, supervisors) ➢ Measures creativity and judgment ability (engineers) ➢ Measures personality components
Knowledge Tests	➢ Measures knowledge of leadership practices (managers and supervisors) ➢ Measures verbal, spatial, numeric, and other aptitudes and dexterity (job seekers at unemployment offices)
Performance Tests	➢ Measures physical coordination (shop workers) ➢ Measures spatial visualization (draftsmen and draftswomen) ➢ Measures ability to work with numbers and names (clerks) ➢ Measure a sample of "on-the-job" demands (managers, professionals)
Graphic Response Test	➢ Measures physiological responses to questions (police, retail store workers)
Attitude Tests	➢ Measures attitudes about theft and related subjects (retail workers, securities employees, banks) ➢ Measures attitudes about work and values (entrylevel, low-income workers)
Medical Tests	➢ Measure the presence of illegal or performance affecting drugs (athletes, government employees, equipment operators) ➢ Identifies genetic predispositions to specific medical problems ➢ Measures and monitors exposure to hazardous chemicals (miners, factory workers, researchers)

Psychological Tests

These tests measure personality or temperament. They are among the least reliable tests. Validity suffers because the relationship between personality and performance is often vague or nonexistent.

Knowledge Tests

These tests are more reliable because they determine information or knowledge. A math test for an accountant and a weather test for a pilot are examples. But specialists must be able to demonstrate that the knowledge is needed to perform the job. The Miami trucking company example is a case where the tested knowledge (reading at an advanced level) was unneeded.

Performance Tests

These tests measure the ability of applicants to do some parts of the work for which they are to be hired, for example, a typing test for typists. Validity is often assumed when the test includes a representative sample of the work the applicant is to do upon being hired. However, if the test discriminates against a protected group, it must be backed by detailed validation studies. Merrill Lynch's test is likely to be considered valid (as discussed in connection with content and construct validity under rational validation approaches because it includes samples of the work an account representative would be expected to do.

Attitude and Honesty Tests

These tests are being used in some circumstances to learn about the attitudes of applicants and employees toward a variety of job related subjects. Since the passage of the Employee Polygraph Protection Act in 1988, polygraph (lie detector) tests have been effectively banned in employment situations. In their place, attitude tests are being used to assess attitudes about honesty and, presumably, on-the-job behaviors. Attitude tests also reveal employee attitudes and values about work. The Work Opinion Questionnaire, for example, has been effectively used in predicting the job performance of entry level low-income workers.

Medical Tests

These tests have grown in popularity in recent years. Through an analysis of urine, hair, or blood samples, laboratories are able to screen for the presence of drugs. Concern about employee drug abuse has spurred IBM, American Airlines, Store Communications,

and many others to require all job applicants to pass a urinalysis for marijuana and cocaine.

As technology has improved, testing for genetic defects or predispositions has become technically and financially feasible.

Barriers to Effective Selection

There are a number of selection methods available which all attempt to predict future work behavior and potential. The key to an effective method of selection is that it should not only provide more information about the candidate but that it should be relevant, useful and comparable between candidates. There is clearly little point in putting candidates through a vigorous selection procedure which provides masses of information only to find that most of its is irrelevant in relation to the job in hand, and that the rest is relevant but difficult or even impossible to compare across candidates. There is an important distinction or difference between how much information is produced and how relevant it is. In this case more does not necessarily mean better.

Evaluative Standards

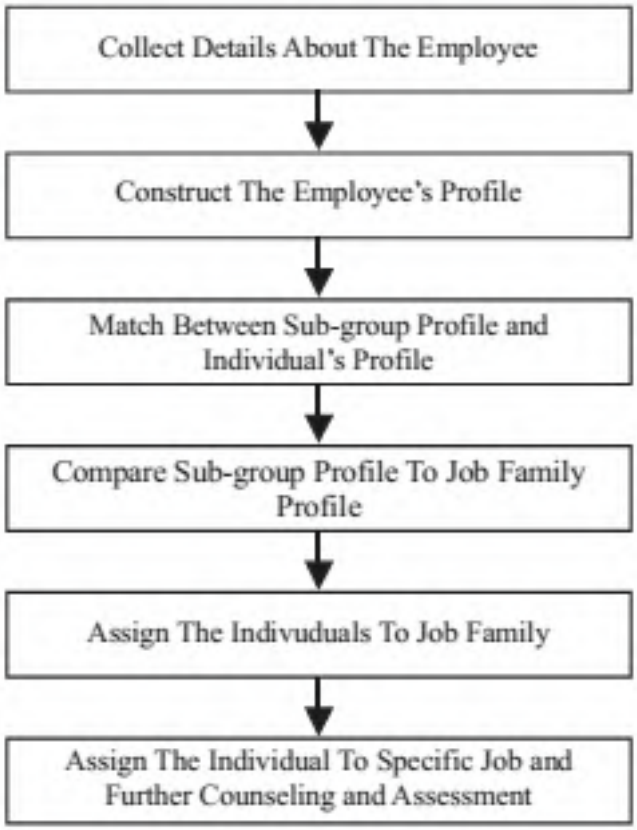
The effectiveness of selection methods will depend upon a number of factors which Muchinsky (1986) refers to as the 'evaluative standards'. The usual standards or measures against which methods are selected are as follows:

- Fairness
- Cost
- User-friendliness
- Acceptability (to the candidate and the organization)
- Validity and reliability
- Applicability

Some 'evaluative standards' are easier to assess than others. Clearly the need to quantify 'cost' as it affects and constrains the process is self-evident, but not easy to quantify when considering both direct and hidden costs (such as the cost of selecting the 'wrong' candidate or the opportunity cost of selector's time. Other constraints and issues such as 'perception', 'fairness' and 'validity and reliability' are not only difficult to assess but even the importance of the concept may not be immediately obvious.

Placement

After selecting a candidate, he should be placed on a suitable Job. It involves assigning aspecific rank and responsibility to an employment. Most organisations put new recruits on probation for a given period of time (say 6 months or 1 year) after which their services are confirmed after successful completion of the probationary period. If the performance is not satisfactory, the organisation may extend the probation or ask the candidate to quit the job. If the employee's performance during the probation period is satisfactory, his services will be regularized and he will be placed permanently on the job. The employee placement process is shown in the figure shown below:



Employee placement process

Placement is an important HR activity. If neglected, it may create employee adjustment problems leading to absenteeism, turnover, accidents, poor performance etc. Proper placement is important to both employee and the organization. Pigors and Myers have defined placement as "the determination of the job to which an accepted candidate is to be assigned and his assignment to that job. It is a matching of what the supervisor has reason to think he can do with the job demands; it is a matching of what he imposes in terms of strain, working conditions, etc., and what he offers in the form of pay roll, companionship with others, promotional possibilities etc.". Proper placement helps to improve employee morale.

If a candidate adjusts himself to the job and continuous to perform as per expectations, it might mean that the candidate is properly placed. However if the new employee has problems in adjusting himself to the job and he continues to perform below expectations, he might be misplaced. Such new recruits should be assigned some other more suitable jobs or they must be given further training to make them fit for the job.

Problems of Placement

Some problems might crop up while placing an employee on a job. These problems could include:

- Employee expectations form the job.
- Expectation form the employers are more than the employee's ability or skills.
- Technological changes might result in mismatch between the job and the employee.
- Change in the organizational structure may result in changes in the job. These changes result in a misfit between the employee and the job.

Module on Performance Appraisal System

Performance appraisal is the process by which organizations evaluate individual job performance. When it is done correctly, employees, their supervisors, the HR department, and ultimately the organization benefit by ensuring that individual efforts contribute to the strategic focus of the organization. However, performance appraisals are influenced by other activities in the organization and in turn affect the organization's success. Performance appraisals are about employee performance and accountability. In a globally competitive world, companies need high performance. At the same time, employees need feedback on their performance as a guide to future behavior. This need is most evident among newcomers who are trying to understand their jobs and the work setting. Longer-service workers also want positive feedback on the good things they do, although they may resent corrective feedback that feels like criticism. Supervisors and managers must evaluate performance in order to know what actions to take. Specific feedback enables them to help with career planning, training and development, pay increases, promotions, and other placement decisions. HR departments use the information gathered through performance appraisals to evaluate the success of recruitment, selection, orientation, placement, training, and other activities. Although informal and ongoing appraisals on a day-to-day basis are necessary to a smooth operation, these methods are insufficient for the HR department's needs. Formal appraisals are needed to help managers with placement, pay, and other HR decisions.

The key factor in an organization to support an effective performance appraisal

system is as follows:

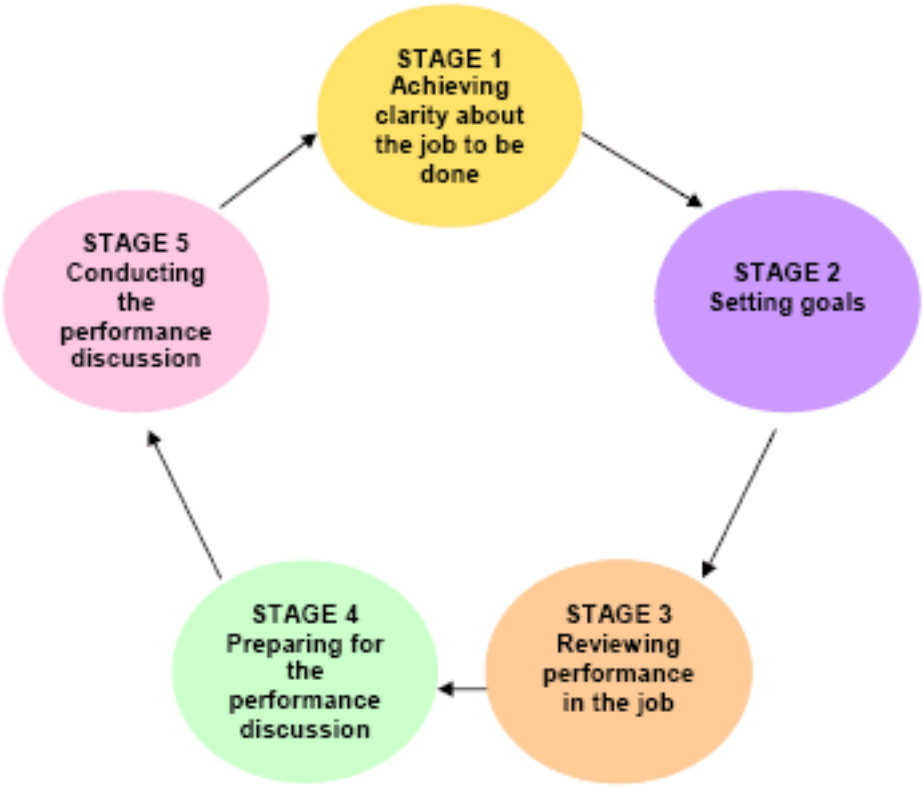
- Organizational planning based on potentialities of human resources.
- Human Resource Planning based on weakness, strengths and potentialities of human resources.
- Organizational effectiveness through performance improvement
- Fixation and re-fixation of salary, allowances, incentives and benefits
- Original placement or placement adjustment decisions
- Identifying training and development needs and to evaluate effectiveness of training and development
- Needs and to evaluate effectiveness of training and development programs
- Career planning and development and movement of employees.
- **Objectives of Performance Appraisal System:** - Performance appraisal aims at attaining the different purposes. They are:
- To create and maintain a satisfactory level of performance.
- To contribute to the employee growth and development through training, self and management development programs. Tata Power aims at employee development through performance appraisal.
- To help the superiors to have a proper understanding about their subordinates.
- To guide the job changes with the help to continuous ranking.
- To facilitate fair and equitable compensation based on performance.
- To facilitate for testing and validating selection tests, interview techniques through comparing their scores with performance appraisal ranks.
- To provide information for making decisions regarding lay-off, retrenchment etc. as in the case of Hyundai Engineering.

The employees working in private organization are worried about their career and future and look forward to their get feedback of their performance as the financial and non financial benefits are associated with it. Most of the organizations performance appraisal is done once in year, but some fast growing companies does it twice in a year also. In the companies where it not done or irregularly done the managers lose their control on their

staff and fail to keep their team motivated and influences productivity. Hence, the appraisal should be done with lot of care and sincerity or it can become a simple routine mechanical process and gradually loose its importance. Few guidelines for managers to make the effective appraisals of employees helping managers and their subordinates to focus on priorities within their jobs are the first step to managing performance.

Organizations aspiring towards high performance cultures are strong on:

- Clarity about objectives and goals.
- Continuous assessment of performance and feedback
- Recognition for performance
- Improvement of individual performance
- Personal development of the employee



Modular flow of appraisal system

Role of HR Department

The HR department usually designs and administers the company's performance appraisal system. Centralization ensures uniformity. Although the HR department may develop different approaches for managers, professionals, workers, and other groups, uniformity within each group is needed to ensure comparability of results. The department

itself seldom evaluates actual performance, however. According to one study, the employee's immediate supervisor performs the evaluation 92 percent of the time because the immediate supervisor is often in the best position to make the appraisal. However, multiple raters—including peers and even subordinates, sometimes called "360-degree" evaluations because the person is being evaluated from all directions—offer additional perspectives at progressive companies such as General Electric, General Motors, and AT&T. At AT&T, for example, 800 high-level executives have rated their superiors and have been rated in return. As jobs and teams become more fluid, some companies use electronic mail (E-mail) to track who people interact with and who should be the evaluators: The appraisal should create an accurate picture of an individual's typical job performance.

Appraisals are not done just to uncover poor performance; acceptable and good results also must be identified so that they can be reinforced. To achieve this goal, appraisal systems should be job-related and practical, include standards, and use dependable measures. Job-related means that the system evaluates critical behaviors that constitute job success. If the evaluation is not job-related, it is invalid. Without validity and reliability, the system may discriminate in violation of equal opportunity laws. Evaluators and employees understand a practical system. A complicated, impractical approach may cause resentment, confusion, and nonuse. A standardized system within the organization is helpful because it allows the establishment of uniform practices. A standardized system often has well-thought-out performance standards and measures.

Sources of Error in Performance Appraisal

1. Legal Constraints

Performance appraisals must be free of Illegal discrimination. Whatever form of evaluation the HR department uses, it should be both reliable and valid. Placement decisions may be challenged because they violate equal employment laws or other laws. Cases legal implications also arise when decisions involve layoffs, demotions, or failure to promote.

2. The Halo Effect

The halo effect occurs when the rater's personal opinion of the employee influences the measurement of performance. For example, if a supervisor likes an employee, that opinion may distort estimates of the employee's performance. This problem is most severe when raters must evaluate personality traits (instead of behaviors), their friends, or people they strongly dislike.

3. The Error of Central Tendency

Some raters do not like to rate employees as effective or ineffective, and so they distort the ratings to make each employee appear average. On rating forms, this distortion causes evaluators to avoid checking extremes, such as very poor or excellent. Instead, they place their marks near the center of the rating sheet. Thus the term error of central tendency has been applied to this bias.HR departments sometimes unintentionally encourage this behavior by requiring raters to provide written justification of extremely high or low ratings.

4. Leniency and Strictness Bias

The leniency bias results when raters tend to be easy in evaluating the performance of employees. Such raters see all employee performance as good and rate it favorably. The strictness bias is the opposite; it results from raters being too harsh in their evaluations. Sometimes the strictness bias results because the rater wants others to think he or she is a "tough judge" of people's performance. Both leniency and strictness errors more commonly occur when performance standards are vague.

5. Cross –Cultural Biases

Every rater holds expectations about human behavior that are based on his or her culture. When people are expected to evaluate others from different cultures, they may apply their cultural expectations to someone who has a different set of beliefs or behaviors. In Denmark, for example, many employees and organizations resisted the use of formal performance appraisals for many years on the grounds that they were inappropriate for Danes. In many Asian cultures the elderly are treated with greater respect and are held in higher esteem than they are in many western cultures. If a young worker is asked to rate on older subordinate, this cultural value of "respect and esteem" may bias the rating. Similarly, in some Arabic cultures women are expected to play a very subservient role, especially in public. Assertive women may receive biased ratings because of these cross-cultural differences. With greater cultural diversity and the movement of employees across international borders, this potential source of bias becomes more likely.

6. Personal Prejudice

A rater's dislike for a group or class of people may distort the ratings those people receive. For example, some HR departments have noticed that male supervisors give undeserved low ratings to women who hold "traditionally male jobs." Sometimes rater is unaware of their prejudice, and this makes such biases more difficult to overcome. Nevertheless, specialists should pay close attention to patterns in appraisals that suggest

prejudice. Such prejudice prevents effective evaluations and may violate anti-discrimination laws. Whereas the halo bias affects one's judgment of an individual, prejudice affects one's judgment of entire groups. When prejudice affects the ratings of protected class members, this form of discrimination can lead to equal employment violations.

7. The Recency Effect

When one uses subjective performance measures, ratings are affected strongly by the employee's most recent actions. Recent actions—either good or bad—are more likely to be remembered by the rater.

8. Reducing Rater Bias

When subjective performance measures must be used, biases can be reduced through training, feedback, and the proper selection of performance appraisal techniques. Training for raters should involve three steps. First, biases and their causes should be explained. Second, the role of performance appraisals in employee decisions should be explained to stress the need for impartiality and objectivity. Third, if subjective measures are to be used, raters should apply them as part of their training.

Appraisal Methods

I. Past-Oriented Appraisal Methods

The importance of performance evaluations has led academicians and practitioners to create many methods to appraise past performance. Most of these techniques represent a direct attempt to minimize particular problems found in other approaches. No single technique is perfect; each has advantages and disadvantages. Past-oriented approaches have the advantage of dealing with performance that has already occurred and to some degree can be measured. The obvious disadvantage is that past performance cannot be changed. But when their past performance is evaluated, employees can get feedback that may lead to renewed efforts at improved performance. The most widely used appraisal techniques that have an orientation to the past include:

- Rating scales
- Checklists
- Forced choice method
- Critical incident method

- Ranking method
- Forced distributions
- Point allocation method
- Paired comparisons

1. Rating Scales

Perhaps the oldest and most widely used form of performance appraisal is the rating scale, which requires the rater to provide a subjective evaluation of an individual's performance along a scale from low to high. The evaluation is based solely on the opinions of the rater, and in many cases the criteria are not directly related to job performance. Although subordinates or peers may use it, the form is usually completed by the supervisor, who checks the most appropriate response for each performance dimension. Responses may be given numerical values to allow an average score to be computed and compared. The number of points attained may be linked to salary increases—so many points equal a raise of some percentage. Other advantages of this method are that it is inexpensive to develop and administer, raters need little training or time to complete the form, and it can be applied to a large number of employees.

The disadvantages are numerous. A rater's biases are likely to be reflected in a subjective instrument of this type. Specific criteria may be omitted to make the form applicable to a variety of jobs. For example, "maintenance of equipment" may be left out because it applies to only a few workers, although for some employees it may be the most important part of the job. This omission and others tend to limit specific feedback. These descriptive evaluations also are subject to individual biases and interpretations. When specific performance criteria are hard to identify, the form may rely on irrelevant personality traits that dilute the meaning of the evaluation.

A Sample Rating Scale for Performance Evaluation

- Dependability
- Initiative
- Overall output
- Attendance
- Attitude
- Cooperation

2. Checklists

The checklist method requires the rater to select words or statements that describe the employee's performance and characteristics. Again, the rater is usually the immediate superior. However, with or without the rater's knowledge, the HR department may assign weights to different items on the checklist depending on each item's importance. The result is called a weighted checklist. The weights allow the rating to be quantified so that total scores can be determined. The weights for each item are in parentheses but usually are omitted from the form the rater sees. If the list contains enough items, it may provide an accurate picture of employee performance. Although this method is practical and standardized, the use of general statements reduces its job relatedness. The advantages of a checklist are economy, ease of administration, the limited training required of raters, and standardization. The disadvantages include susceptibility to rater biases (especially the halo effect), use of personality criteria instead of performance criteria, misinterpretation of checklist items, and the use of improper weights by the HR department. Another disadvantage is that this approach does not allow the rater to give relative ratings. For example, employees who gladly work overtime get the same score as do those who put in overtime unwillingly.

- Employee works overtime when asked
- Employee keeps workstation or desk well organized
- Employee cooperatively assists others who need help
- Employee plans actions before beginning job

3. Forced Choice Method

The forced choice method requires the rater to choose the most descriptive statement in each pair of statements about the employee being rated. Often both statements in the pair are positive or negative.

1. Learns quickly ……..Works hard.
2. Work is reliable……Performance is a good example for others.
3. Absent too often……Usually tardy.

Sometimes the rater must select the best statement (or even pair of statements) from four choices. However the form is constructed, HR specialists usually code the items on the form into predetermined categories such as learning ability, performance, and interpersonal relations. Then effectiveness can be computed for each category by adding up the number of times each category is selected by the rater. The results then show which areas need further improvement. Again, the supervisor is usually the rater, although subordinates or

peers may provide evaluations. The forced choice method has the advantage of reducing rater bias because some employees must be rated as superior to others. This approach also is easy to administer and fits a wide variety of jobs.

Although practical and easily standardized, the general statements may not be specifically job-related. Thus this method may have limited usefulness in helping employees improve their performance. Even worse, an employee may feel sighted when one statement is checked in preference to another. For example, if the rater checks the worker may feel that his or her hard work is being overlooked. This method is seldom liked by either the evaluator or the employee because it provides little useful feedback.

4. Critical Incident Method

The critical incident method requires the rater to record statements that describe extremely good or bad behavior related to job performance. The statements are called critical incidents and are usually recorded by the supervisor during the evaluation period for each subordinate. Recorded incidents include a brief explanation of what happened. Several typical entries for a laboratory assistant appear. Both positive and negative incidents are recorded and classified (either as they occur or later by the HR department) into categories such as control of safety hazards, control of scrap material, and employee development.

5. Ranking Method

The ranking method requires the rater to place each employee in order, from best to worst. The HR department knows that certain employees are better than others, but it does not know by how much. The employee ranked second may be almost as good as the one ranked first or may be considerably worse. This method is subject to the halo and recency effects, although rankings by two or more raters can be averaged to help reduce biases. Its advantages include ease of administration and explanation.

6. Forced Distributions

Forced distributions require raters to sort employees into different classifications, usually with specified proportions in each category. The criterion shown overall performance, but this method can be used for other performance criteria, such as reliability and control of costs. As with the ranking method, relative differences among employees are not known, but this method does overcome the biases of central tendency, leniency, and strictness errors. Some workers and supervisors at American Express's Western Regional Operations Center strongly dislike this method because some employees received lower ratings than they or

their supervisor-raters thought were correct. However, forced distributions required that some employees be rated low.

7. Point Allocation Method

The point allocation method requires the rater to allocate a fixed number of points among employees in the group. Good performers are given more points than are poor performers. The advantage of this method is that the rater can recognize the relative differences between employees, although the halo effect and the recencybias remain.

8. Paired Comparisons

Paired comparisons force raters to compare each employee with all the other employees in the same group who are being rated. The basis for comparison is usually overall performance. The number of times each employee is rated superior to another can be summed to develop an index. The employee who is preferred the most is the best employee on the criterion selected. A. Wilson is selected nine times and is the top-ranking worker. Although subject to halo and recency effects, this method overcomes the leniency, strictness, and central errors because some employees must be rated higher than others.

II. Future-Oriented Appraisal Methods

Using past-oriented approaches is like driving a car by looking through the rearview mirror; you know only where you have been, not where you are going. Future-oriented appraisals focus on future performance by evaluating an employee's potential or setting future performance goals. In practice, many past-oriented approaches include a section for the supervisor and employee to record future plans. Four common approaches to evaluating future performance are:

- Self-appraisals
- Management by objectives
- Psychological appraisals
- Assessment centers

1. Self-Appraisals

Getting employees to conduct a self-appraisal can be a useful evaluation technique if the goal of evaluation is to further self-development. When employees evaluate themselves, defensive behavior is less likely to occur and self-improvement is thus more likely. When

self-appraisals are used to determine areas of needed improvement, they can help users set personal goals for the future. The risk is that the employee will be too lenient or too critical of his or her performance. If self-appraisals are used among a diverse or international workforce, home-office HR specialists must be aware of cultural differences that may lead to evaluations that over- or understate performance and future plans. Obviously, self-appraisals can be used with any evaluation approach, past- or future-oriented. The important dimension of self-appraisals is the employee's involvement in and commitment to the improvement process.

2. Management by Objectives

The heart of the management by objectives (MBO) approach consists of goals that are objectively measurable and mutually agreed on by the employee and the manager. Since an employee gets to participate in setting his or her goals, the expectation is that employees will be motivated to achieve those goals. Moreover, since they can measure their progress, employees can adjust their behavior to ensure attainment of the objectives. However, to adjust their efforts, employees must receive performance feedback on a timely basis. Objectives also help the employee and supervisor discuss the specific development needs of the employee, which can make future training and development efforts appear more relevant to the employee. When done correctly, performance discussions focus on the job's objectives, not on personality variables. Biases are reduced to the extent that goal attainment can be measured objectively. In practice, MBO programs have encountered difficulties. The objectives are sometimes too ambitious or too narrow or are not set participative but imposed by the superior. The result is frustrated employees or overlooked areas of performance. For example, employees may set objectives that are quantitatively measurable to the exclusion of subjectively measurable ones that may be equally important. The classic illustration is quantity versus quality of work. When employees and managers focus on subjectively measured objectives, special care is needed to ensure that biases do not distort the manager's evaluation.

3. Psychological Appraisals

Some organizations employ industrial psychologists on a full-time or retainer basis. When psychologists are used for evaluations, they assess an individual's future potential, not that individual's past performance. The appraisal normally consists of in-depth interviews, psychological tests, discussions with supervisors, and a review of other evaluations. The psychologist then writes an evaluation of the employee's intellectual, emotional, emotional, motivational, and other work-related characteristics that involve individual potential and may predict future performance. The estimate by the psychologist may relate to a specific

job opening for which the person is being considered, or it may be a global assessment of the person's future potential. From these evaluations, placement and development decisions may be made to shape the person's career. Because this approach is slow and costly, it is usually reserved for executive-level decisions or for bright young managers who others think have considerable potential within the organization. Since the quality of these appraisals depends largely on the skills of the psychologist, some employees object to this type of evaluation, especially if cross-cultural differences exist.

4. Assessment Centers

Assessment centers are another method of evaluating future potential, but they do not rely on the conclusions of one psychologist. Assessment centers are a form of standardized employee appraisal that relies on multiple types of evaluation and multiple raters. They are usually applied to managers who appear to have the potential to perform more responsible jobs. Often the members in the group first meet at a hotel or training facility. During their stay, they are individually evaluated. The process puts selected employees through in-depth interviews, psychological tests, personal background histories, peer ratings by other attendees, leaderless group discussions, ratings by psychologists and managers, and simulated work exercises to evaluate their future potential. The simulated work experiences usually include in-basket exercises, decision-making exercises, computer-based business games, and other job like opportunities that test the employee in realistic ways. These activities usually are performed during a few days at a location physically removed from the jobsite. During this time, the psychologists and managers who do the rating attempt to estimate the strengths, weaknesses, and potential of each attendee. They then pool their estimates to arrive at a conclusion about each member of the group. Assessment centers are both time-consuming and costly. Not only are the candidates away from their jobs, with the company paying for travel and lodging, the evaluators are often company managers who are assigned to the assessment center for short periods. These managers are often supplemented by the psychologists and HR professionals who run the center and also make evaluations. Some critics question whether the procedures used are objective and job-related, especially since rater biases may affect the subjective opinions of attendees. Nevertheless, assessment centers have widespread use, and researchers are finding ways to validate the process. The results assist management development and placement decisions. From the composite ratings, a report is prepared on each attendee. This information goes into the HR information system to assist HR planning (particularly the development of replacement charts) and other HR decisions. Interestingly, research indicates that the results of assessment centers constitute a good prediction of on-the-job performance. Unfortunately, this method is expensive since it usually requires both a separate facility and the time of multiple raters.

The basic phases of a performance appraisal process are:

- Identify job-related performance measures.
- Design a system congruent with entity structure and other human resources systems.
- Train the appraisers to administer performance evaluations.
- Inform the employees and train them on the appraisal system.
- Document the system.
- Conduct timely appraisals.
- Use assessment information to determine promotion potential, provide feedback on performance, plan performance goals, and develop training needs.
- Monitor and reevaluate the system.

The criteria related to the basic phases of the performance appraisal process are as follows:

Identify Job-Related Performance Measures

Performance appraisals are formal systems that provide feedback to employees. Good feedback should follow as closely as possible on an action, should be specific rather than general, and should be limited to actions that pertain to an employee's responsibilities and that fall within an employee's control (Mohrman, p. 118). Performance appraisal systems begin with a job analysis to identify important performance characteristics and standards. Performance measures must be well-defined and job-related to attain acceptable levels of reliability and validity (Moore, p. 7). Performance measures must be documented and discussed with employees.

Design a system congruent with entity structure and other human resources systems Performance appraisal systems should be linked to the entity's strategy, be consistent with the entity's organization culture, effectively evaluate individual performance, facilitate supervisor/subordinate communication, provide for ongoing performance feedback, and reinforce personal development (American Compensation Association, Individual Perf. Mgmt., p. 7.3, 1992). The performance appraisal system must comply with relevant state and case law.

Train the Appraisers to Administer Performance Evaluations

The manager must be able to facilitate the exchange of information between the entity and the individual. Performance appraisers who are trained to recognize effective and ineffective performance and are aware of possible system problems will provide more

reliable ratings than untrained appraisers. Training helps appraisers develop a common frame of reference for evaluating performance (Moore, p. 5).

Inform the Employees, and Train them on the Appraisal System

Performance standards must be communicated to employees in advance of performance appraisal. Employees are more receptive to a performance appraisal system when open communication and discussion of the system occur between managers and employees. Information about the appraisal process should be presented in a format which allows employees to feel actively involved in the process. Communication about the performance appraisal system should demonstrate the value of the system to the employee. Communication of the system should include written documentation. Training on the performance appraisal system should include the mechanics of the system and the skills needed to operate the system (Mohrman, pp. 135, 138, 139).The establishment of agreed upon performance standards between employees and managers is crucial to the appraisal process. Care must be taken to reach a consensus on the expectations of both parties before implementing the measures for evaluating worker performance.

Document the System

Policies and procedures for the appraisal system must be written either in policy format or in a manual. Performance should be documented and recorded on an appraisal form. Evaluation criteria should be clearly stated. Evaluations should include supporting documentation and evidence of feedback. The appraisal system should allow for a response from the employee verifying that the results of the appraisal have been communicated to him or her (Pomeranz, p. 136).

Conduct Timely Appraisals

Although no single rule exists as to how often appraisals should be given, most organizations conduct them annually. This assumes that the performance cycle of the employee matches the annual operating cycle of the entity. The rule of thumb is that appraisals should not be conducted until performance can be reasonably measured (Mohrman, pp. 119-123). Therefore, employees who work on short-term projects should be apprised more frequently than those assigned projects with longer terms. Appraisals should be timely and given as frequently as the stated policy indicates.

Use assessment information to determine promotion potential, provide feedback on

performance, plan performance goals, and develop training needs

Organizations should offer rewards and incentives that appeal to the employees, including opportunities for personal and professional development (Mohrman, pp. 199-200). Human resources decisions should be consistent with appraisals. Feedback should be performance-related, credible, timely, and pertain to performance over which the employee has some control. Feedback should be useful in developing performance goals and evaluating training needs (Moore, p. 3). Performance appraisal systems should provide a basis for a clear understanding of the relationship between pay and performance. Note, however, that the current trend is to separate performance appraisal systems from compensation systems. Performance appraisals should also provide information that can lead to a sense of accomplishment and should explain to employees which behaviors are appropriate and which are not (National Research Council, p. 146).

Monitor and Reevaluate the System

Performance appraisal systems must be continually monitored (Moore, p. 10). Entities should review their performance appraisal system to ensure rating accuracy and system effectiveness. Appraisers' ratings and decisions should be reviewed by the entity. Information needs to be collected on the managers' and employees' reactions to the system and how frequently it is used. Changes in the entity's structure or needs should be reflected in the appraisal system. A performance appraisal system review process emphasizes the organization's commitment to the appraisal system (Mohrman, p. 158).

Some examples of measures that could be used in the monitoring process are:

- Performance appraisal timeliness, which measures the average number of day between appraisals and compares to stated policy
- Low rating outcomes, which measure the kind of corrective action taken, such as training, personal counseling, or discipline, when a low rating is received
- High rating outcomes, which measure rewards given, such as merit pay increase, achievement bonus, or other form of recognition, when a high rating is received
- System outcomes, which measure the average rating and the rating spread
- Outcome equity comparisons, which compare ratings and/or salary increases by manager, age, organizational group, gender, race, job, family, or other applicable categories to assess the possibility of bias

Conclusion

Since some degree of error is inevitable in all employment decisions process, the crucial question to be answered in regard to each appraisal system is whether its use results in less human, social, and organizational cost than is currently paid for these errors. The answers to that question can result only in a wiser, fuller utilization of our human resources.

Training & Development Module

In the knowledge driven world of today, the pace of change is so fast that it even defies Moor's law. Even to stay at the same place, the organizations have to run fast. Strategic advantage to the organizations comes only from the core competences, which are developed by the individuals working in it. Such levels of excellence can be achieved only by investing in people. Investment must not confine to compensation only, but must entail the inputs aimed at updating the skills of the employees. Training is one such potion to cure the organizations of the sluggishness, which may creep in because of the organizational inertia. Largely, personnel department has been associated with procuring and hiring the human resources. But, after the newly appointed employees join the organization, it is necessary to impart training to them in order to make them competent for the jobs that they are supposed to handle. In modern industrial environment, the need for training of employees is widely recognized to keep the employees in touch with the new technological developments. Every company must have a systematic training program for the growth and development of its employees. It may be noted that term 'training' is used in regard to teaching of specific skills, whereas the term 'development' denotes overall development of personality of the employees. This chapter studies the various methods of training and development, which are used by various organizations, particularly those engaged in the business and industrial activities.

Meaning and Purpose of Training

Training is a process of learning a sequence of programmed behavior. It is application of knowledge. It gives people an awareness of the rules and procedures to guide their behavior. It attempts to improve their performance on the current job or prepare them for an intended job. According to Edwin D Flippo, "the purpose of training is to achieve a change in the behavior of those trained and to enable them to do their jobs better," in order to achieve this objective, any training program should try to bring positive changes in:

- Knowledge – it helps a trainee to know facts, policies, procedures and rules pertaining to his job.

- Skills – it helps him to increase his technical and manual efficiency necessary to do the job and
- Attitude – It molds his/her behavior towards co-workers and supervisors and creates a sense of responsibility in the trainee.

Importance of Training

The reasons why training is important are:

1. Training enables the management to face the pressure of changing environment
2. Training usually results in an increase of quantity and quality of output.
3. Training leads to job satisfaction and higher morale of the employees.
4. Trained workers need lesser supervision.
5. Trained workers enable the enterprise to face competition from rival organizations.
6. Training enables employees to develop and rise within the organization and increase their earning capacity.
7. It molds the employees' attitudes and helps them to achieve better cooperation within the organization.
8. Trained employees make better economic use of materials and equipment resulting in reduction of wastage and spoilage.
9. Training instructs the workers towards better job adjustment and reduces the rate of labor turnover and absenteeism.

Benefits to Organization

A program of training becomes essential for the purpose of meeting the specific problems of a particular organization arising out of the introduction of new lines of production, changes in design, the demands of competition etc. the major benefits of training to an organization are:

1. Higher Productivity: - Training can help employees to increase their level of performance on their present assignment. Training increases the skill of an employee in the performance of a particular job. Increased performance and productivity, because of training, are most evident on the part of new employees who are not yet fully aware of the most efficient and effective ways of performing their job. An increase in skill usually helps to increase both quantity and quality of output.

2. Better Organizational Climate: - An endless chain of positive result from a well-planned training program. Increased morale, less supervisory pressures, improved product quality, increased financial incentives, internal promotions etc., result in better organizational climate.

3. Less Supervision: - Training does not eliminate the need for supervision, but it reduces the need for constant supervision.

4. Prevents Manpower Obsolescence: - Manpower obsolescence is prevented by training as it fosters the initiative and creativity of employees. An employee is able to adapt himself to technological changes.

5. Economic Operations: - Trained personnel will make economical use of materials and equipment. This will reduce wastage in materials and damage to machinery and equipment.

6. Prevents Industrial Accidents: - Proper training can help to prevent industrial accidents.

7. Improve Quality: - Trained employees are less likely to make operational mistakes thereby increasing the quality of the company's products.

8. Greater Loyalty: - A common objective of training program will mold employees' attitudes to achieve support for organizational activities and to obtain better cooperation and greater loyalty. Thus, training helps in building an efficient and loyal work force.

9. To Fulfill Organization's Future Personnel Needs: - When the need arises, organizational vacancies can be staffed from internal sources, if an organization initiates and maintain an adequate training program.

10. Standardization of Procedures: - Trained employees will work intelligently and make fewer mistakes when they possess the required know-how and have an understanding of their jobs.

Benefits to Employees

1. Personal Growth: Employees on a personal basis gain individually from training. They secure wider awareness, improved skill and enhanced personal growth.

2. Development of New Skills: Training improves the performance of the employees and makes them more useful and productive. The skill developed through training serves as a valuable personal asset to the employee. It remains permanently with the employee.

3. Higher Earning Capacity: By imparting skills, training facilitates higher remuneration and other monetary benefits to the employee. Thus, training helps each employee to utilize and develop his full potential.
4. Helps Adjust with Changing Technology: Old employees need refresher training to enable them to keep abreast of the changing methods, techniques and use of sophisticated tools and equipment.
5. Increased safety: Proper training can help prevent industrial accidents. Trained workers handle the machined safely. Thus, they are less prone to industrial accidents. A safe work environment also leads to a more stable mental attitude on the part of the employees.
6. Confidence: Training creates a feeling of confidence in the minds of employees. It gives safety and security to them in the organization.

Development

Executive or Management Development

Executive or management development is a long-term educational process utilizing a systematic and organized procedure by which managerial personnel learn conceptual and theoretical knowledge.

Development is a related process. It covers not only these activities, which improve job performance, but also those, which bring about growth of the personality; help individuals in the progress towards maturity and actualization of their potential capacities so that they become not only good employees but also better human beings. In organizational terms, it is intended to equip persons to earn promotional and hold greater responsibility. Training a person for a bigger and higher job is development.

According to Harold Koontz and Cyril O'Donnell, "Developing a manager is a progressive process in the same sense that educating a person is. Neither development nor education should be thought of as something that can ever be completed, for there are no known limits to the degree one may be developed or educated.

Manager development concerns the means by which a person cultivates those skills whose application will improve the efficiency and effectiveness with which the anticipated results of a particular organizational segment are achieved"

According to G.R.Terry, "Management development should produce change in behavior which is more in keeping with the organization goals than the previous behavior. The change frequently consists of a number of small steps resulting from training but the cumulative effect is considerable. It is also basic that a terminal behavior is identified before the development efforts starts".

Thus, executive or management development implies that there will be a change in knowledge and behavior of the individual undergoing development program. The individual will not only be able to perform his job better but also increase his potential for future assignments through the acquisition, understanding and use of new knowledge, insights and skills. Self-development is an important concept in the whole program of management development.

Need and Importance of Executive Development

In this age of "professionalization of management", importance of executive development cannot be minimized. Executive talent is the most important asset of an organization. According to Peter Drucker, "an institution that cannot produce its own managers will die. From an overall point of view the ability of an institution to produce managers is more important than its ability to produce goods efficiently and cheaply".

The need for executive development is felt because:

1. There is a shortage of trained mangers. The organization has to develop the talented employees and maintain an inventory of executive skills to meet the future demands.
2. The performance of a company depends upon the quality of its managers. Executive development, therefore, is of paramount importance to have effective and desired managerial talents to meet the organizations demand.
3. Obsolescence of managerial skills is another factor, which calls for continuous executive development. A manager must continuously update himself to successfully meet new challenges as they occur.

Objectives of Executive Development

1. To ensure a steady source of competent people at all levels to meet organizational needs at all times.
2. To prevent managerial obsolescence by exposing the managers to new concepts and techniques in their respective fields of specialization.

3. To prepare the present employees for higher assignments so that they may be promoted from within.
4. To develop a second line of competent managers for future replacements.
5. To promote a high morale and good organizational climate.

Methods of Executive Development

Methods of executive development can be classified into two broad categories:

1. On-the-job methods and
2. Off-the-job methods

1. **On-the-job Methods**

a) Coaching: On-the-job coaching is a procedure by which a superior teaches job knowledge and skills to a subordinate.

b) Job Rotation: The trainee is periodically rotated from job to job so that he acquires a general background of different job.

c) Special Projects: Under this method, a trainee is assigned to a project that is closely related to the objectives of his department. The trainee will study the problem and make recommendations upon it.

d) Committee Assignments: Under this method, an adhoc committee is constituted and is assigned a subject to discuss and make recommendations. The committee will make a study of the problem and present its suggestion to the departmental head.

2. **Off-the-Job Methods**

a) Role-Playing: Role-playing techniques are used for human relations and leadership training. Under this method, a conflict situation is artificially constructed and two or more trainees are assigned different parts to play. Its purpose is to give trainees an opportunity to learn human relations skills through practice and to develop insights into one's own behavior and its effect upon others.

b) Case Study: Under this method, the trainees may be given a problem to discuss which is more or less related to the principles already taught. This method gives the trainee an opportunity to apply his knowledge to the solution of realistic problems.

c) Conference Training: The trainee as a member can learn from others. The conference is ideally suited to learning about problems and issues and examining them from different angles.

d) Management Games: A management game is a classroom exercise in which teams of students compete against each other to achieve common objectives. The game is designed to be a close representation of real-life conditions. .

e) Sensitivity Training or T Group Training: it is an experience in interpersonal relationships, which results in change in feeling and attitudes towards oneself and others.

f) Special Courses: The executives may be required to attend special courses, which are formally organized by the enterprise with the experts from educational institutions.

Steps in Training Program

Training program is a costly and time-consuming process. The training procedure discussed below is essentially an adoption of the job instruction-training course. The following steps are usually considered as necessary.

1. Discovering or identifying training needs.
2. Preparing the instructor or getting ready for the job
3. Preparing the trainee
4. Presenting the operation
5. Try out the trainees' performance
6. Follow-up or rewards and feedback

1. Discovering or Identifying the Training Needs

A training program should be established only when it is felt that it would assist in the solution of specific problems. Identification of training needs must contain three types of analysis:

(a) Organizational Analysis – determine the organization's goals, its resources and the allocation of the resources as they relate to the organizational goals.

(b) Operations analysis – focuses on the task or job regardless of the employee doing the job.

(c) Man analysis – reviews the knowledge, attitudes and skills a person must acquire to contribute satisfactorily to the attainment of organizational objectives. Armed with the knowledge of each trainee's specific training needs, program of improvement can be developed that are tailored to these needs. The training program then follows a general sequence aimed at supplying the trainee with the opportunity to develop his skills and abilities.

2. Preparing the Instructor

The instructor is the key figure in the entire program. He must know both the job to be taught and how to teach it. The job must be divided into logical parts so that each can be taught at a proper time without the trainee losing perspective of the whole. This becomes a less plan. For each part one should have in mind the desired technique of instruction, i.e., whether a particular point is best taught by illustration, demonstration or explanation.

3. Preparing the Trainee

This step consists of:

(a) Putting the learner at ease

(b) Stating the importance and ingredients of the job and its relationship to work flow;

(c) Explaining why he is being taught

(d) Creating interest and encouraging questions, finding out what the learner already knows about his job or other jobs.

(e) Explaining the 'why' of the whole job and relating it to some job the worker already knows

(f) Placing the learner as close to his normal position's possible and

(g) Familiarizing him with the equipment, materials, tools and trade terms.

4. Presenting the Operations

This is the most important step in a training program. The trainer should clearly tell, show, illustrate and question in order to put across the new knowledge and operations. There are various alternative ways of presenting the operation namely, explanation, and demonstration etc. An instructor mostly uses the method of explanation. In addition one may illustrate various points through the use of pictures, charts, diagrams and other training aids. Demonstration is an excellent device when the job is essentially physical in nature.

The following sequence of training may be followed:

(a) Explain the sequence of the entire job
(b) Do the job step by step according to the procedure
(c) Explain each step that he is performing
(e) Have the trainee explain the entire job

Instructions should be given clearly, completely and patiently; there should be an emphasis on key points and one point should be explained at a time. The trainee should also be encouraged to ask questions in order to indicate that he really knows and understands the job.

5. Try out the Trainees' Performance

Under this, the trainee is asked to go through the job several times slowly, explaining each step. Mistakes are corrected, and if necessary, some complicated steps are done for the trainee the first time.

Then the trainee is asked to do the job, gradually building up skill and speed. As soon as the trainee demonstrates that he can do the job in the right way, he is put on his own. The trainee, through repetitive practice, will acquire more skill.

6. Follow-Up

The final step in most training procedures is that of follow up. This step is undertaken with a view to testing the effectiveness of training efforts. The follow up system should provide feedback on training effectiveness and on total value of training system. It is worth remembering that if the learner hasn't learnt, the teacher hasn't taught.

Training & Development Modules

Standard training modules includes several areas (see). However design and deliver training programs depending on specific situations:

Standard and Customized Training Modules

- Presentation skills
- Change management

- Negotiating
- Staff leadership
- Selling skills
- Effective teams
- Conflict management
- Coaching and mentoring
- Customized Programs at all levels/mediums.

Training & Development Modules

	Front-liners	Middle management	Top management
Mobilizing	➢ Managing "Moments of Truth" ➢ Communicating with the customer	➢ Leading teams and processes internal and external	➢ Transformational leadership for organizational excellence ➢ Leading empowered teams
Planning	➢ Understanding Quality	➢ Understanding Quality at Workspace ➢ Deliviring Quality	➢ Delivering World Class Quality
Implementing	➢ Enhancing customer satisfaction - making tangible change happen ➢ Productivity enhancement	➢ Enhancing customer satisfaction - making tangible change happen ➢ Continuous improvement at the work-place	➢ Developing a case for action for enhancing Performance ➢ Crafting a Strategic Plan

Compensation Management

Concept

The literal meaning of compensation is to counter –balance. In the case of human resource management, compensation is referred to as money and other benefits received by an employee for providing services to his employer. Money and benefits received may be in different forms base compensation in money form and various benefits, which may be associated with employees services to the to the employer like provident fund, gratuity insurance scheme and any other payment which the employee receives or benefits he enjoys in lieu of such payment. Cascio has defined compensation as follows; "compensation includes direct cash payments, indirect payments in the form of employees to strive for higher levels of productivity."

Compensation Policy is derived from organizational strategy and its policy on overall human resource management. In order to make compensation management to work effectively, the organization should clearly specify its compensation policy, which must include the basis for determining base compensation, incentives and benefits and various types of perquisites to various levels of employees .The policy should be linked with organizational philosophy on human resources and strategy. Besides many external factors, impinge on the policy, must also taken care of. Job analysis and evaluation .Job analysis provides basis for defining job description and job specification with the former dealing with various characteristics and responsibilities involved in a job and dealing and the latter dealing with qualities and skills required in performer, job analysis also provides base for job evaluation which determines the relatives worth of various jobs in the organization, The relative worth of various jobs determines the compensation packages attached with each job.

Analysis of Contingent Factors

Compensation plan is always formulated in the light of various factors, both external and internal, which affect the operation of human resource management system. Various external factors are conditions of human resource market, cost of living, level of economic development, social factors, pressure of trade unions and various labor laws dealing with compensation management. Various internal factors are organization's ability to pay and employee's related factors such as work performance, seniority, skills, etc. These factors may be analyzed through wage/salary survey.

Design and Implementation of Compensation Plan

After going through the above steps, the organization may be able to design its compensation plan incorporating base compensation with provision of wage/salary increase over the period of time, various incentive plans, benefits and perquisites. Sometimes, these are determined by external party, for example, pay commissions for Govt. employees as well as for public sector enterprises. After designing the compensation plan, it is implemented. Implementation of compensation plan requires it's communication to employees and putting this into practice.

Evaluation and Review

A compensation plan is not rigid and fixed one but is dynamic since it is affected by a variety of factors which are dynamic. Therefore, compensation management should have a provision for evaluating and reviewing the compensation plan. After implementation of the plan, it will generate results either in terms of intervening variables like employee satisfaction and morale or in terms of end-result variable like increase of productivity. However, this latter variable is more important. The evaluation of compensation plan must be done in this light. If it does not work as intended, there should be review of the plan necessitating a fresh look.

Job Evaluation

For fixing compensation to different jobs, it is essential that there is internal equity and consistency among different job holders. Job evaluation aims to provide this equity and consistency by defining the relative worth of different jobs in an organization. Job evaluation is the process of determining the relative worth of different categories of jobs by analyzing their responsibilities and consequently, fixation of their remuneration. International Labor Organization (ILO) has defined a job evaluation as follows:

"Job evaluation is an attempt to determine and compare demands which the normal performance of a particular job makes on normal workers without taking into account the individual performance of the workers concerned". The definition of job evaluation provided by ILO has been adopted by others.

For example, French has defined job evaluation as follows: "Job evaluation is a process of determining the relative worth of the various jobs within the organization, so that differential wages may be paid to jobs of different worth. The relative worth of a job means relative value produced. The variables which are assumed to be related to value produced are such factors as responsibilities, skills, efforts and working conditions".

Objectives of Job Evaluation

The basic objective of job evaluation is to determine the relative contributions that the performance of different jobs makes towards the realization of organizational objectives. This basic objective of job evaluation serves a number of purposes which may be grouped into three categories: wage and salary fixation, restructuring job hierarchy and overcoming anomalies.

Wage and Salary Fixation

The basic principle of wage and salary fixation is that it should be based on the relative contributions of different jobs and not on the basis of who the job holders are. If this principle is adopted, the first requirement is to identify the likely contributions of different jobs. This is what job evaluation precisely does. It provides the information about what is the worth of a job in terms of its contributions to the achievement of the organizational effectiveness. From equity point of view, this method is more appropriate.

Restructuring Job Hierarchy

Job evaluation helps in restructuring job hierarchy. Job hierarchy refers to arranging various types of jobs in the order of their importance wither on ascending basis or descending basis. Sometimes, job hierarchy becomes too lengthy creating administrative problems and creating organizational problems by increasing the number of levels in the organization. In today's context, more emphasis is being put on flat structure instead of tall one. Job evaluation exercise can be undertaken to reduce the number of job levels by merging closely related jobs together. For example, successive Pay Commissions appointed by Govt. of India have recommended reduction in number of pay scales by merging two or more scales into one in order to reduce their number in job hierarchy.

Overcoming Anomalies

Job evaluation, if carried on periodically and objectively, helps in overcoming various anomalies which may develop in an organization over the period of time with regard to compensation management. Knowles and Thompson have identified that there are following anomalies and evils which may develop in an organization and may be overcome by job evaluation.

1. Payment of high wages and salaries to persons who hold jobs and positions not requiring great skill, effort and responsibility;

2. Paying beginners less than that they are entitled to receive in terms of what is required of them;
3. Giving a raise to persons whose performance does not justify the raise;
4. Deciding rates of pay on the basis of seniority rather than ability;
5. Payment of widely varied wages and salaries for the same or closely related jobs and positions; and
6. Payment of unequal wages and salaries on the basis of race, sex, religion, or political differences.

Problems in Job Evaluation

Like any other technique of human resource management, job evaluation is not free from certain shortcomings and limitations. Various problems involved in job evaluation may be grouped into two categories: technical and operational.

Technical Problems

There are some technical problems involved in effective job evaluation, which are of the following nature.

1. Job evaluation establishes hierarchy of jobs based on their worth. Though there are various methods developed for this purpose, these are not completely objective. For example, often the question is asked: 'Should grass-cutters (gardeners) get more than gas-cutters (welders)'? Similar such questions may be raised if there is lack of objectivity.

2. Another problem in establishing job hierarchy through job evaluation comes in the form of changing profile of job factors because of changes in environmental variables such as technology, social structure and processes, and international impact. Therefore, a job hierarchy, which may be workable at one point of time, may not work at another point of time. Thus, in order to make job evaluation effective, it should be undertaken at regular intervals.

3. Job evaluation is a costly and technical exercise. Therefore, many organizations do not prefer to take it in a formal way. Rather, they prefer to go through prevailing practices.

Operational Problems

Besides the technical problems, there are some operational problems too in job evaluation. These are of the following types:

1. Linking jobs, based on job evaluation, and wages and salaries is not completely possible because of the operation of several forces in the environment. There are substantial differences between job factors and the factors emphasized by the human resource market. Often it has been observed that these external factors change with the time, e.g., previously, engineers were the highest earners but now the sequence is followed by medicos, MBAs and now information technology professionals in ascending order through over the period of time, their job factors have remained the same.
2. Job hierarchy created through job evaluation may create human problems in an organization particularly if it has been taken for the first time and results into fundamental differences as compared to the existing system. In such a situation, job evaluation may face resistance from the employees.
3. Job evaluation is, generally, suited to large organizations where human resource management system has been formalized. In comparatively smaller organizations, this may not result in much advantage. The existence of various problems in job evaluation does not mean that it should not be undertaken. In fact, this should be undertaken. The problems identified above indicate that suitable safeguards should be provided while undertaking job evaluation to make it more productive.

Job Evaluation and Performance Appraisal

Sometimes, a misplaced perception arises in which job evaluation is equated with performance appraisal. This happens because of the contribution of both in wage/salary determination. However, both are quite different concepts, use different methods and have different objectives as shows:

Comparison of Job Evaluation and Performance Appraisal

Job evaluation	Performance appraisal
1. It evaluates the job and not the job holder.	1. It evaluates the job holder on the basis of his job performance.
2. The job is evaluated before the job holder is appointed to perform the job.	2. Evaluation is done after the employee has performed the job.

3. Once job evaluation is done, it is applicable over a number of years.	3. Appraisal is a continuous process and is undertaken every year.
4. Evaluation is done by a committee consisting of specialists in the relevant areas.	4. Appraisal is done by the concerned superiors and other persons who know about the employees concerned.
5. Job evaluation is not adopted by all organizations, even the large ones. They may follow the generally accepted prevailing practices.	5. Appraisal is undertaken by all organizations in regular basis, either formally or informally.
6. The basic objective is to measure the relative worth of a job in comparison to other jobs.	6. There are many objectives of appraisal: wage/salary increase, promotion/ demotion, transfer, assessing training needs.

Process of Job Evaluation

Job evaluation is process consisting of several steps (see). National institute of Personnel Management has prescribed the following steps in job evaluation process:

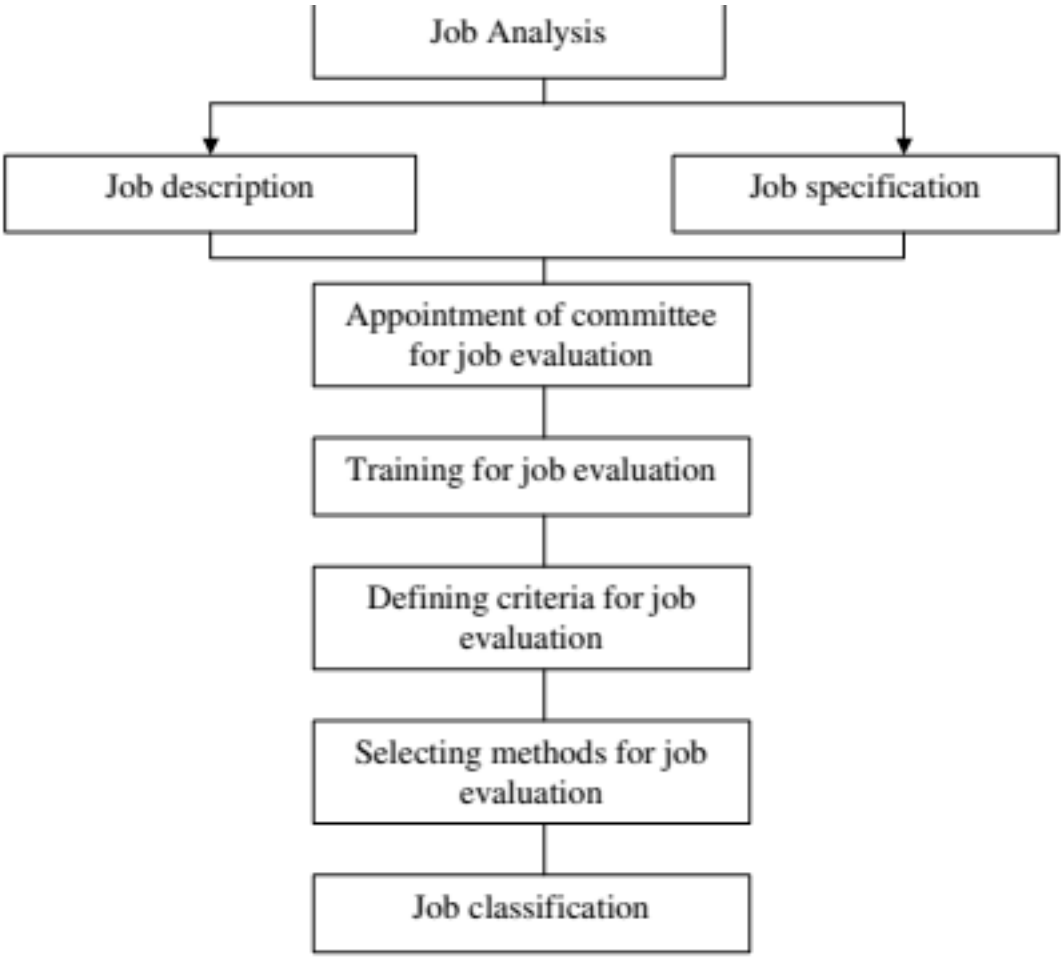
1. Analyze and prepare job description
2. Select and prepare a job evaluation plan.
3. Classify jobs into different categories
4. Install the job evaluation program, and
5. Maintain the program.

A more comprehensive job evaluation process has been presented below:

Job Analysis

Job evaluation process starts with the base provided by job analysis. Job analysis identifies various dimensions of a job in two forms: job description and job specification.

Job description provides responsibilities involved in the performance of the job while job specification provides attributes required in the job performer. Both these taken together provide information about various factors involved in different jobs.



Process of Job Evaluation

Information System's support for Planning & Control

Establishing and monitoring internal controls over human resource (HR) information are important management functions. Internal control is fundamental to addressing risks to the completeness and accuracy of information and thus to providing assurance over the reliability of HR information, its compliance with applicable laws and regulations and the effectiveness and efficiency of operations. Increasingly, entities are utilizing Human Resource Management Information Systems (HRMIS) to assist in managing their workforce and in meeting their employer obligations.

The effective discharge of these responsibilities is necessary to support the development and implementation of government programs and activities. However, the integration of technology to support managing a modern workforce can introduce a range of information management risks. With this emphasizes the important role of both system and manual controls in maintaining the integrity and confidentiality of HR information. It provides an overview of significant risks and controls that are relevant to key HR functions, with particular focus on managing risks through implementation of better practice principles.

It identifies better practice system controls, and describes manual or process controls that are relevant to support or strengthen the implementation of system controls. It discusses risks and controls associated with the design, implementation and maintenance of the HRMIS and will be useful to assist HR system managers and practitioners to:

- Implement better practices to improve the effectiveness and efficiency of HR and payroll processes;
- Strengthen system controls and appropriately manage and segregate user access to key system functions; and
- Increase awareness of system controls within the PeopleSoft and SAP HR systems that are used by a large number of Government entities.

Implementation of controls should have due regard to the cost benefit involved. Equally, reducing controls for cost-saving reasons should be carefully managed as the operating risk profile may be increased. The HRIS is important to strategic decision-making as well as supporting day-to-day operational planning and administration.

It intended for HR practitioners and system managers and discusses significant risks and controls relevant to the effective management of key HR functions.HR and payroll functions are closely linked and changes in one process may create issues in another. As such, there is an emphasis on implementing controls to safeguard the privacy and integrity of information.

Key Functions Modules in Information System's Support for Planning & Control

The major of significant risks and controls that are relevant to key HR functions. Establishing and monitoring the effectiveness of internal controls are important management functions and each chapter of the Guide provides details of better practice controls that are relevant to mitigating risks.

HR and Payroll Data Management

Input and maintenance of HR and payroll data poses a significant area of risk in any HRMIS. It is important that controls are implemented to contribute to the maintenance of HR and payroll data that provides for accurate and complete employee information and payroll transactions.

Workforce Management

Workforce management is a key strategic consideration within government entities. As with most other organizations, human capital is considered a significant asset, and the recruitment and maintenance of the right workforce is the key to success for operational and strategic objectives.

The workforce management activities within a HRMIS to strengthen processes associated with the collection and maintenance of employee information, and in this context, the main activities that are discussed are:

- Employee commencements; and
- Employee exits and terminations.

Payroll Processing and Administration

Payroll processing and administration is highly dependent on a number of inter-linking HR functions. The HRMIS provides a number of functions in performing payroll calculations that are crucial to ensuring that calculations are accurately performed. There are a number of supporting controls, particularly relevant to payroll disbursement and posting of payroll expenses to the General Ledger. The risks and controls relevant to:

- Time reporting;
- Payroll accounting; and
- Processing of applicable deductions.

System Maintenance and Integration

There are a number of functions and configuration options that can be used within an HRMIS to enhance the control environment or to increase efficiency within HR management processes. The chapter recognizes that the extent of configuration of system controls varies across organizations.

Factors such as entity size, size of the HR team, and whether payroll processing is outsourced contribute to the business requirements to operate and configure controls. The chapter provides an overview on 'additional configurable controls' that may contribute to increasing the efficiency of the HR function and may equally contribute to the accuracy of the HR outputs.

Topics covered include:

- Managing system interfaces;
- Managing system rules; and
- Managing software updates.

Personnel Administration Data Systems (PADS) These provide data needed to carry out the personnel administration responsibilities of an employer. As the government legislates additional protections and social programs, these responsibilities have increased and are growing. Affirmative action requirements in USA, health and safety regulations and pension plans regulation are many new sources of the employer's responsibilities. Payroll and personnel planning data system (PPDS) are closely related to PADS, all using the employee master file.

Not only accessing the file, but updating of file is often organized on a coordinated basis. Data items in the employee file are updated by the payroll system not for self but also for PADS and PPDS. Payroll provides the most effective way to capture the new data for this updating activity.

Three Types of PADS

(i) Personnel status reporting systems (Files used are Employee file, Job file).

(ii) Personnel action systems (Files used are Employee file, Job file).

(iii) Fringe benefit administration systems (Files used are Employee file, Insurance claims file, Insurance accidents file).

All the three data systems parallel the common administrative responsibilities of the personnel department in large organizations. There may be other administrative responsibilities differing from the above in some of the organizations which may give rise to other types of data system. Fringe benefit systems may include a variety of systems like:

(i) Group insurance,

(ii) Pension,

(iii) Profit sharing,

(iv) Credit union,

(v) Educational programs etc.

It is assumed here that a DBMS is used to manage the files involved in the above systems. An integrated set of files is used by all the personnel administration systems. There are several files, but all the three systems access the employee file. Putting at least a segment of the above files on a DASD is justified.

The employee file should be accessible by employee name, department, skill, category, race, sex, other employee characteristics and the employee number (File key). Secondary key access to the file should be possible. The employee files have to be segmented in view of the cost of storing employee data as a result of increasing government regulation of the employment activity. The less activity data can be placed in a segment stored on tape/mass storage systems. The real time features needed for the most cost effective personnel action and fringe benefit data system can be achieved by placing the jobs file, job applicant file and the insurance file on DASK.

Employee File

This file provides data relevant to many aspects of employee supervision and administration as well as for workforce planning. The data are grouped under 'seven' headings:

(i) Identification Data
(ii) Benefit Data
(iii) Payroll Data
(iv) Termination Data
(v) Performance Data
(vi) Skills Data
(vii) Affirmative action Data

In some of the companies, these groups may differ according to their needs or convenience. Affirmative action data is not required in India. Termination data is also of not much prominence in India. Identification data items serve to identify and locate a particular employee. The data items that serve a significant business purpose is to be included. Employee name, address and telephone number are important. Employee number is the file key. To identify an employee in the organization, whatever data items required are to be included. Social security number in countries like USA is required for tax purpose in the payroll data section of the record. Pointer to next record with the same job and location code is used to make record retrieval efficient in the personnel status reporting system. Performance data items are used for supervisory and work force planning purposes.

An employee review system is in operation means that the immediate supervisor reviews the employee's performance periodically, rates them according to an evaluation scheme and set goals for the next period. Job performance statistics are to be maintained, concerning tardiness, unexcused absences, idle time and performance relative to the standard hours set for each piece of work.

Benefit data items are required to administer the employee benefit programs such as life insurance, health care insurance, pension plans etc. Skills data items are mainly for employee promotion and project assignment purposes concerning the last position held prior to the employee's current position and the highest formal education level achieved. Additional detail on work history and education should be placed in a separate file with pointers to that file in the employee master file. Various skill codes can be used in the employee file to summarize the employee skills.

Affirmative action data items (in USA) are facts required to prepare a defense against changes of:

(i) Unfair hiring (ii) Promotion and (iii) Termination practices

Access to these data items (see table) should be restricted to those responsible for preparing such defenses. Termination data is primarily of value in controlling unemployment insurance expenses. It has value in ad hoc workforce planning and strategic studies.

Employee file data items

Data	Data items
(i) Identification Data	Employee number (File key), name, addresses, telephone numbers, job code, location, shift, citizenship, pointer to next record with same job and location code.
(ii) Performance Data	Last review date, review type, rating, promote ability date, next job, comment, next review date, days tardy, days absent without prior approval, idle time as percentage of total, earned hours as percentage of actual hours.
(iii) Benefit Data	Life insurance policy type, effective dates, coverage, pay roll deduction amount, health insurance policy type, effective dates, coverage, retirement plan type code, eligibility date, plan service date, vesting date, pension option date, projected retirement date, projected benefit payment.

(iii) Skills Data	Lost job title, location, reported to name and position, employer, last pay rate, date left position, reason, month in position, pointer to job history file, highest formal education level, year received highest degree, school major, pointer to education history file, language skill codes, technical skill codes, relocation constraint codes.
(iv) Payroll Data	See payroll system
(vi) Affirmative Action Data	Race, sex, age, religion
(vii) Termination Data	Position at the time of termination, department, part time, reported to name and position, pay rate, months in position, pointer to job history file, date of termination, date notice given, last day of work, termination type code (voluntary, misconduct etc.),specific reason code, rehire eligibility, exit interview, comments and codes, date claim protest lodged, date of response to protest and outcome, date of appeal.

Job Data

A job or position exists independent of the employees filling it, authorized in a work force budget. It is usually defined by a job description that covers qualifications, duties and responsibilities. The same job may exist in several places in an organization. Clerk-typist position may exist within many departments of an organization. To define the job specifically, a location code and job code is usually required. More than one employee may be required to perform a certain job in a particular location. Another important data item is number of full-time and part time employees filling a particular job at a location.

The data items (see table) in this file are:

(i) Identification Data
(ii) Position description Data
(iii) Budget Data and
(iv) Performance Data

Location code, Job code and Shift form the file key. The pointer to first employee record provides an efficient way to access the employee file for employment control reporting purposes. The position description data is useful to the personnel department in advertising possible positions and screening applicants for those positions. The cut-off data is the last date that the new application for an open position will be accepted.

The budget data is for work force and cost control purposes. The actual labor and labor related costs are compared to the budgeted figures, which are the work force budget set by the work force planning system. Travel expenses, fleet expenses and cost of operating supplies are the examples of labor related operating expenses.

The budget data in this file provides supporting data for the labor and labor related expenses totals in the cost centre file. Pointers are used as 'pointer to job file and pointer to next job' in the same cost centre. Performance data items include measurement of the productivity and idle time also, dated with a job as well as indications of job dissatisfaction and supervisory problems.

Job Data

Data	Data items
Identification Data	Location code, job code, shift (all three are file keys), cost centre account number, job title, current number of employees, pointer to first employee record.
Position Description Data	Summary statement of duties, specific duties, experience, qualifications, educational qualifications, required references, supervisor (name, job code, location) pay range and scale, number of equivalent full time positions authorized, current unfilled positions, cut-off date.
Budget Data	Labour hours (budget and actual) (past, current future periods) Average labour cost/hour " " Average related expense/hour " " Total labour cost " " Total related expense " " Pointer to next job in same cost centre
Performance Data	Turnover rate, tardiness, frequency, absenteeism in frequency

Job Applicants' File (Refer Table)

The items are in four groups:

(i) Applicant identification data
(ii) Work history data
(iii) Education data and
(iv) Application status data

Here also the data classifications etc. vary from company to company. The application status data records the actions taken on the application.

Job applicants' file

Data	Data items
Applicant Identification Data	Covers location code, shift, job code, applicant serial number (all in file keys) name, pointer to next name in alphabetical order, address, telephone.
Work History Data	Covers last job title, location, reported to name and position, employer (name, address, telephone), last pay rate, date terminated (or still on job?), months in position, months with the last employer, reason for leaving, relocation constraint code.
Education Data	Covers highest formal education level, year received highest degree, school, major, language skill code, technical skill code.
Application Status Data	Covers how was the applicant reached? Initial screening results, Interview (date, interview results), notification (date, notice sent, sender).

Accident file (Refer table)

This file contains a record for each reportable accident. It is usually an event for which the organization may be held responsible for damages (i) Either directly or (ii) Through worker's compensation insurance.

The data items are grouped into three categories:

(i) Time and place data
(ii) Characteristics data
(iii) Effects data

The time and place data items define when and where the accident took place. The characteristics data item describes the accident. The effects data items record actions as a result of the accident and the costs incurred subsequently as a result of the accident.

Accident file

Data	Data items
(i) Time and Place Data	Serial number (file key), date of accident, date reported, time of accident, day of week, physical location of accident, responsible cost centre, responsible supervisor.
(ii) Characteristics Data	Accident type code (preventable), huzzard condition code, unsafe act, mechanical failure, vehicle number (motor vehicle accident (MVA type), pavement condition (if MVA type), weather, pointer to claims and injury file.
(iii) Effects Data	Report made to government agencies, corrective actions taken. Total property damage, total medical expenses, total lost work time, other expenses.

Claims and Injuries File (Refer Table)

These may be insurance claims recorded by the organization under insurance policies or they may be claimed by employees under group insurance policies managed by the organization. Also, damages resulting from an accident for which no insurance claims can be made are recorded. These are organized although these are payment files of a claim (To data, from data, Basis data, When data, Amount data).

The Basis data describes the injury or other event that is the basis for the claim. Several claims must be set up to describe the events involved. Pointers are suggested to link

this record to the record in the accident file to describe the accident and to link this claim to other claims arising from the same accident.

Claims and injuries file

Data	Data items
(i) To-Data	Relation to organisation (employee, customer, etc), name (both are file keys), employee number (if any), address, telephone, social security number. (in USA)
(ii) From-Data	Payment by company, insurance policy involved, general ledger account.
(iii) Basis-Data	Claim type, injury or damage code, description of property damages, safeguards provided, safeguards used, pointer to accident file, pointer to next claim for same accident.
(iv) When-Data	Date claim filed, date of final settlement.
(v) Amount-Data	Expense type code, actual cost, insurance reimbursement amount.

Data Privacy and Integrity

The employee file should have this important database consideration. So also, the job applicant's file, job master and insurance claims files. Both the employer and employee are concerned about this data. The privacy of pay-rate data is of concern to both the employer and employee. From the employer point, he wants to safeguard this information from other employees and competition (about the individual's earning or job's pay). So also, the employee may not want others to know his earnings or other data items such as medical reports. Both employer and employee may want access to this data strictly controlled. Personnel Status Reporting System These systems make available data in the employee and job's files for supervisory purposes. The systems are designed to leave the needs of at least four groups:

(i) Employment control reporting system (for managers who may need facts about employees for a variety of reasons).

(i) Employee profile (for employees who should be given an opportunity to review and update the data concerning them in the files).

(ii) Personnel data retrieval (for the personnel department, to perform many of its functions, requires data concerning employees).

(iii) Employment practice compliance reporting (for the government agencies that enforce equal opportunity, affirmative action, or other legislation and regulations pertaining to employees).

Personnel Action Systems

As the name itself specifies, this system supports the activity of the personnel department in taking actions on the following:

(i) Filling job openings and

(ii) Recording and reporting promotions, transfers, terminations and other employee status changes

Two systems involved are:

(i) Placement data system and

(ii) Personnel activity reporting system.

The details vary from organization to organization. Equal employment opportunity and affirmative action concerns are making more extensive data systems necessary with respect to both the above systems. There is a growing need to document the search procedure employed to job applicants and the decision procedure by which the new applicant is selected. Promotions, transfers and termination need more justification than they were in the past.

Placement Data System

Placement data procedures center around the development and use of more applicant files (generally more than one). Separate files are required for jobs that require a new type of data items on job applicants. Example: Files may be different for blue collar and white collar jobs. The applicant record files contain the data items on the job application form and also items that define the source and disposition of the application. The applicant file is linked to jobs file by having the same file key, so that the list of applicants for a desired

job can be quickly retrieved. In the jobs file, the available job openings are indicated by one or more data items to define how many openings are there and the cut-off date for receiving the applications. It also contains a description of job, experience, education pre-requisites, location, travel and any other special requirements. When a manager needs an employee for an existing position or for a new position, he first fills out a job requisition from and sends it to the personnel department. If the status of an existing employee is changed due to promotion, transfer or termination, the action also should be reported to the personnel department for updating the employee file. After receiving the requisitions and personnel action reports by the personnel department, the data is input to the jobs file and the employee file either through a remote on-line terminal in the personnel department or submission of the data to a key entry section.

Three more procedures may be carried out for job requisitions for the available position.

(i) By advertising internally using an in house organization newspaper or a special announcement procedure.

(ii) By advertising externally in newspapers, private placement services, state employment agencies and other media.

(iii) A skill search of the employee file may be performed to locate qualified candidates. This can be through DBMS that has a user-oriented retrieval language. Such language permits the user to define the characteristics required of an applicant for a specific job. The system examines each record of the employee and retrieves the outputs of those that match with the requirements.

The personnel department reviews the applications received with regard to the advertisement. Any tests required to know the candidate's qualifications will be administered by them and recorded on the application. Depending on the volume of work, a special data system may be established for scoring and recording tests. The applications are then encoded and entered into the applicant file by the personnel department either on a remote data terminal or by sending the data to the processing department for key entry. The manager who has sent the requisition is the final authority to decide which applicants to be interviewed. For those who were not qualified for interview, it should be stated in their application the reasons and these should be returned to personnel department for input of the reason into the applicant's file.

The applicants identified by skill search or with recommendations from personnel department are to be interviewed. The input to the applicant's file includes these. The

conclusion of each interview with manager's recommendations should be recorded and entered in the applicant's file. A formal interview report is produced or evaluation may be included on the application form. This can be an input to the applicant's file in the personnel department. The record of a successful applicant is used to establish an employee master record for the new employee. A procedure to do this can be programmed and stored in the database and activated by the personnel department, using a single command typed in at a remote on-line terminal and done as a batch procedure.

The records in an applicant file concerning a job which has been filled should be removed from the active applicant's file and placed in a history file, stored in a less expensive, newer storage medium-magnetic tape. History file provides a complete record as to how each job opening is filled, useful whenever changes of bias or inept management ever have to be answered. The system should link the applicant file to the job's and the employee files and provide the data needed by the personnel department and management in carrying out recruitment programs and retain detailed recruitment activity records.

Personnel Activity Reporting System

This procedure set records changes an employee status and produce reports periodically (generally on a weekly basis),based on which the personnel department initiates follow up activities. The reports are produced from a file containing personnel transactions of the recent ones.

Whenever a permanent data item in the master file record gets changed, the same is done through a copy in the personnel transaction file, with a code indicating the type of change. E.g.: New hire, promotion, transfer, change of address etc. The procedure for this can be programmed and automatically activated by DBMS or the file management system. The personnel transaction file is sorted periodically by the transaction code and the personnel activity reports are produced.

Self Assessment Questions

1. What are the major issues presented that affected the time, cost and scope of the project?
2. What are the minor problems presented that affected the integration?
3. What are the cultural issues that are interwoven in this project that affected HR or IT?
4. What type of evaluation/closure would help in this project?
5. Who should be involved in future global integration projects? What skills should

team members have and how should they be selected?

6. If you were to create some of your own "lessons learned," what might they be and how would they affect future projects?

CASE STUDY

Learning Objectives

By the end of this case, students will:

- Understand how time, cost and scope affect the project management of an HRIS integration.
- Identify potential problems in a global integration of an HRIS.
- Identify cultural issues present in a global integration of an HRIS.
- Describe why evaluation is important and how it could be done when integrating an HRIS.
- Identify the skills needed by employees when participating in a global HRIS integration.
- Analyze the case and identify lessons learned from the global integration of an HRIS.

Background

A global energy company incorporated in the United States has approximately 54,000 employees in more than 180 countries. The U.S.-based human resource information system (HRIS) currently houses approximately 20,000 employee records and tracks both bi-monthly and bi-weekly payrolls. The system also tracks employees who are represented by a variety of unions. The U.S.-based HRIS is owned and operated by the HR functional group but supported by a different HR group within the information technology (IT) department. The IT support group has approximately 140 employees and contractors. The HR IT support manager reports to the IT support manager with a dotted line to the global HR manager. There are plans to integrate the European division's HRIS into the U.S.-based HRIS. The European division's HRIS houses approximately 1,000 employee records and one union representing a small percentage of the 1,000 employees. The European HRIS is owned and supported by the HR group whose manager reports to the global HR manager. At the same time of the HRIS integration, a merger has caused changes to the existing U.S.-based HRIS. In addition, another part of the company is about to bring in 88 countries into

the U.S.-based enterprise resource planning (ERP) system, including the HR portion. The integrations have different timelines for completion, and coordination is critical so that changes that affect each of the integrations do not create problems that affect the current production system.

Description of Project Team

The HR department in London owns and supports the European HRIS for the portion of the company that will be integrated into the U.S. HRIS. Their current system lacks proper controls and received an unsatisfactory internal audit. It was determined that the system would require extensive changes and that it would be more cost effective to replace the system than to make the changes.

The London-based HR office selected an HRIS implementation partner, Limited Experience, Inc., to facilitate the integration. The firm has no knowledge of the U.S.-based system and has relatively little experience with integrating part of an HRIS into an already existing system. The London-based HR office has provided the project manager for the integration, Frankie. Frankie has knowledge of the European HRIS but no experience with IT projects and the current U.S.-based HRIS. Limited Experience, Inc. has provided a co-project manager, Pat. Pat has never led a project of this size nor does Pat have knowledge of the U.S. system or how current HR projects would affect their project. In the end, Frankie and Pat ended up being co-project managers, though Frankie was more of the lead. Lyn was also hired by the London office to be the technical team lead. Lyn has no experience as a technical team lead on an IT project that uses this HRIS software and does not know the culture of the London-based group or the U.S.-based group. Lyn comes from an organization where it is acceptable to yell at employees who do not meet expectations. This is not the culture for the HR organization in either London or the United States. Lyn also has no experience with the U.S. software or the U.S. technical team's processes. A U.S.-based senior design analyst, Jamie, was added to the team on a consultation basis. Jamie travels between London and the United States, spending approximately 50 percent of the time in each location. Jamie has led similar projects, is familiar with other concurrent HR projects and is knowledgeable about the production support processes. Jamie has no knowledge of the London-based HRIS. Jamie's responsibility is to inform the project and HR leadership of any design issues that may cause concerns with the current production system or the concurrent projects. The project team consists of people from various HR groups within Europe. None of these team members have previous HR IT project experience. There are also people from the project implementation partner company on the team.

Challenges of Integration

For one of the first steps of the project, the team documented the current HR processes and systems. As the team went through each process, the team member assigned to that particular area would describe and chart the current processes and the differences between the European and U.S. processes. After this documentation was completed, the project team invited subject matter experts (SMEs) to meetings lasting from half a day to three days to discuss the current processes and the effects of changing from the European processes to the U.S. processes. The U.S. senior design analyst attended as many of these meetings as possible to ensure that the project team understood the current processes. However, the design analyst would often need to ask someone from the U.S. support team to clarify specific details. Because of the time difference between the London and U.S. teams, this often involved at least a one-day delay. When certain processes—such as reporting, payroll and interfaces—were analyzed or discussed, the senior design analyst encouraged that these areas be reviewed. These areas were not reviewed in an appropriate manner because the project team manager (Frankie) and co-manager (Pat) were adamant that these areas didn't need to be reviewed at the time. They said that reporting would be reviewed at each of the various SMEs meetings and that payroll was being outsourced and did not need to be reviewed at the project-team level. It was discovered much later in the project that reporting should have been analyzed earlier; much of the reporting is based on management needs and does not necessarily need to be created for a particular area. Also, many of the codes that were used for reporting were not appropriate or consistent. For example, the U.S. Equal Employment Opportunity report with the designation of African American was not relevant for European employees. Also, employees on family leave are designated as "on leave" for U.S. reporting, while European reporting requires they be designated as "active," per HR Revenue and Customs (previously called the Inland Revenue Office). It was also later discovered that the payroll process should have been analyzed. Master data was collected in the HRIS, and certain fields had to be sent to an outsourced company. The data needed to be interfaced back to the financial system for reporting requirements. In addition, audit and control requirements necessitated that additional payroll data be interfaced back to the new integrated HRIS. Also, the confidentiality of the payroll data required that specific encryption software be used. The outsourced company had never used the encryption software used in the U.S. system. At the end of the project, the outsourced company realized it had to obtain the encryption software, train their technical team to use it and design a process that would meet the U.S. technical team's standards. This required some project team members to travel to the United States to work with the U.S. network support team. As the project team progressed from documenting current processes and the effect of using U.S. processes, a methodology was created to determine what new coding would be acceptable for the global integration. If the project team leaders, the senior design analyst

(with agreement from concurrent project team leaders) and the HR production support manager agreed on the new process, the coding or technical decision was implemented. If there was no consensus, project team leaders and the senior design analyst would present options to the global HR manager and the HR IT support manager. The issues were often technical and complex. The project team would schedule meetings at times when the senior design analyst was unable to attend and then present the issue in a way that their preferred outcome would be approved. In many cases, the decisions turned out to be unworkable and were reversed, causing additional delays. One of the most difficult decisions during the integration was determining if a change was a legal requirement. SMEs would often say that the current process was required by law, but when they were asked to provide the actual law, it turned out that it was not a legal requirement but a preferred solution by current managers or employees. Some U.S. processes also thought to be legal requirements turned out not to be the case. When the online interface for the HRIS was being designed, various issues arose.

One issue was language. At the start of the project, it was thought that language would not be an issue because both groups spoke and wrote English. However, the spelling of many words was different, such as "center" or "centre" and sometimes different terms were used for the same meaning. It was decided to use U.S. English, a decision that was not popular with the project team. Another challenge of the online interface for the HRIS was to decide which data could be changed online by employees. When a U.S. employee wanted to change an address, he or she could not change that information online because it may involve benefits changes. For example, if an employee moved from California to Texas, her current health care provider may not be available in Texas, requiring the employee to coordinate the address change with a medical plan choice. In addition, some address changes needed to allow for a new home address for tax purposes (versus a work address for a tax location) in the system. For example, if an Atlanta, Georgia, employee moved to Aiken, South Carolina, so that his home address was in South Carolina and his work address was in Georgia, this tax combination may not be in the system, requiring a system change that would need to be created, tested and moved to production before the address change could be made. In Europe, however, address changes did not affect benefits or tax data.

As the project team moved to the coding and testing phases of the project, it became apparent that having only one U.S. representative on the team was not sufficient. Many decisions required involving multiple members of the current production support team. After various members met together, one person or a few people created the changes in the test system and tested the procedure. It would often take many tries before a successful test. By the end of the project, most of the London team spent two to four weeks in the United States to resolve issues that couldn't be resolved with team members "across the

pond." When the system went live, the current U.S. production support team sent a team to London to help resolve issues that arose during the first two weeks of implementation. They had not met the entire project team or most of the SMEs located in London. During the time they spent in London, members of the U.S. production support team tried to quickly resolve production issues from the implementation, worked with new people and adjusted to the time difference. They also had to coordinate times to meet with their U.S.-based counterparts. Because of the time difference, these meetings often occurred during the U.S.-based team's off hours.

What hours support would be available and who would provide what level of support was a lively discussion. In the first couple of weeks after going live, the U.S. support teams had representatives in Europe and were able to provide support during their work day. Once that time had passed, adequate support had to be provided for a much longer time than had previously been required.

Conclusions

The project was about three months late, over budget, and many items had to be fixed when the system went live. Despite this, the London-based team had a party to celebrate their success, which included a dinner at an expensive restaurant and a limo ride home if necessary. They also received a handsome bonus. The U.S. team members and the global HR manager were not invited to the celebration or given bonuses. After the senior design analyst found out about the celebration, a U.S. celebration (consisting of a lunch) was held and a similar bonus awarded. The London project managers were invited but were unable to travel at the time. The hot topic at the celebration lunch was how future project teams should be formed when other HR areas wanted to integrate their current system.

The length of the answers to the questions should be between 5-10 pages. Please use the instruction from the syllabus for style and format.

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UNIT - IV

Unit Structure

Lesson 4.1 - Organisation Process

Lesson 4.1 - Organisation Process

Learning Objectives

After reading this chapter, you should be able to understand

- The different types of Organization Structure & Related Management Processes
- The Authority & Responsibility Flows
- Communication Process
- Organization Culture and Power
- Data Capturing for Monitoring & Review
- Information Processing for Decision Making

Introduction

Human Resource Information Systems (HRIS) is an effort towards speedy, effective and professionally handling of information on resources for efficient management of Human Resource function. HRIS is a computerized system used to acquire, store, analyze and distribute information regarding an organization's human services and to provide services in the form of information to the clients or users of the system. Human Resource Information Systems (HRIS), It merges HRM as a discipline and in particular it's basic HR activities and processes with the information technology field, Maintenance and updating of manual records system is a labor-intensive job and transfer of data from one record to other increases the chance of error which affects the accuracy and reliability of data held. The manual records cannot provide all data of an employ at a time, different information being stored in different files. It becomes difficult to provide a single comprehensive picture of an employee on one record. Here HRIS plays a competitive and comprehensive role to

facilitate the user with the required information at their fingertips. Thus HRIS is a system that enables storing of information of Human Resource in every aspect such as Personal, Academic, Qualification, Family, Medical, Career and Performance Evaluation, Training & Development & Wage and Salary of individuals. Unlike manual systems the HRIS enables availability of all such information in a single screen. Reports on various parameters can be generated with ease. Moreover reliability of such records is assured. The difficulty in maintaining manual records and their inability to provide the 'complete picture' can be stated as the two basics reasons gave the evolution of HRIS. The voluminous data on employees, which is unfeasible to track manually, has become easier to update at frequent intervals. Updating and maintaining of manual records systems is labor intensive as well as costly process and at same time increases the chance of error. HRIS tracks all the aspects of employee administration perfectly while reducing chances of errors.

The Basic Need of HRIS is

1. Efficiently storing each employee information and data for reference personal data management, pay roll accounting, benefits management and planning.
2 Enabling informed decision making in day-to-day personnel issues, planning, budgeting, implementing and monitoring Human Resource function.
3. Providing data / returns to government and other public
4. Facilitating decision making in areas like promotion, transfer, nomination, settling employees provident funds, retirement, gratuity, LTC, and earned leave compensation.
5. Cutting costs.
6. Improving accuracy

HR functions were among the first to be automated maybe along with accounting. HRIS grew over the years to take the shape of Employee Relationship Management (ERM) tools, Knowledge Management portals & Employee Portals. HR self-help, e-Learning and knowledge sharing are some of the early benefits being reaped out of the system. A greater sense of organizational bonding can achieve what traditional HR aimed at for ages - lower employee turnover, high morale, and effective personalized training & skill retention. Being the most implemented project in enterprises, the potential for these applications is huge & can be gauged from the fact that every large software vendor, be it in ERP or CRM is bringing out products in this segment. BEA Systems (Weblogic Portal), Oracle (My Oracle), SAP (my SAP Enterprise Portal), Siebel Systems (ERM group of applications), IBM (Web sphere Portal), PeopleSoft (PeopleSoft 8 HRMS) & Microsoft (Business Portal) are some of the major players.

HRIS Management Process

HRIS system has three major functional components: Inputs, Data maintenance and Outputs. Each of these is discussed below as to its role in the overall system.

Input Function

The input function provides the capabilities needed to get human resource data into the HRIS. Some of the first things that must be established are the procedures and processes required to gather the necessary data. In other words, where, when and how will the data be collected? Once collected they must be entered into the system. Some information may require coding before entering. Once the data have been input they must be validated to ensure that they are correct. Edit / validation tables can be used to determine if the data are acceptable. These tables contain approved values against which the data are automatically checked. The system should have the capability to easily update and change the validation tables.

Data Maintenance Functions

The data maintenance function is responsible for the actual updating the data stored in the various storage devices. As changes occur in human resource information, this information should be incorporated into the system, as new data are brought into the system it is often desirable to maintain the old data in the form of historical information.

Output Function

The output5 function of an HRIS is the most visible and familiar one. The reason is that the majority of HRIS uses are not involved with collating, editing / validating and updating human resource data; rather they are concerned with information and reports to be used by the systems. Most human resource reporting consists of the following:

1. Selecting a segment of the total population for further evaluation; the selection is based on the values of such items as exempt / non-exempt, salary grades/ classifications, age, sex, departments, continuous service and so on.
2. Performing some type of calculations using the population previously selected in item 1, such as calculating average salaries, average merit increases and so forth.
3. Providing a report containing specific information regarding the selected population and / or the calculation results.

The demand of the output function is the major factors determining the particular type of the software to be used.

In addition to being able to produce a specific report on request the output function should have the capability to provide and update a reports library. A report library basically stores the program and historical data necessary to generate reports that are periodically requested. This feature saves substantial time by automatically updating the data needed to produce the reports in the library. Another desirable capability is they ability to generate turnaround documents. Turnaround documents basically are simple reports that show the current data values and provide a place to indicate any changes. They are used to help solicit updates to the data. Naturally the specific inputs, frequency of updates and reports required for an organization HRIS will differ somewhat with each situation. However the basic components and capabilities just discussed should apply in all most all situations, regardless of size and complexity.

HR –Management Process-II

Today's organization is undergoing many structural changes that present challenges for human resource managers e.g. Downsizing, outsourcing, rightsizing and reengineering cause some of these structural changes. Downsizing is the laying off of large numbers of managerial and other employees. As a result of downsizing, many companies are outsourcing services that the human resource department previously provided. Outsourcing refers to subcontracting work to an outside company that specializes in that particular type of work. Some examples of services being outsourced include 401(k) plan administration and management development programs. Rightsizing is the continuous and proactive assessment of mission-critical work and its staffing requirements. Rightsizing differs from downsizing in that it is an ongoing planning process to determine the optimal number of employees in every area of the organization. Other companies are implementing reengineering programs. Reengineering refers to a fundamental rethinking and radical redesign of business process to achieve dramatic improvements in cost, quality, service, and speed. In essence reengineering usually results in sweeping changes in management and organization structures.

Evolution of HRIS

The first computerized human resource application in business took place at General Electric in the early 1950s. A 1984 survey of 1000 personnel journal subscribers, which yielded 434 usable returns, revealed that 99.7% of the respondents used computers in one capacity or another in the human resource function. A similar survey conducted in 1988 found that 99.8% of the respondents had automated one or more Human resource function.

This is quite an evolution to have taken place in just a few decades. Undoubtedly computer usage has increased since this last survey.

First Generation

The first generation of computerized HRIS is involved the conversion of manual information keeping system to computerized system. Often a large external service bureau ran the resulting systems. In the case of very large firms an in-house mainframe computer. Large, costly processor crunched pay roll and other data and end uses had very limited access to the system. Data had moved from the file cabinet to a mysterious mainframe. Human resource data were now in the care of a computer group that was either in-house or contracted outside. Requests from human resource personnel for information had to be funneled through the computer group. This system did result in a significant decrease in the time required to produce most reports, but it also made Human Resource personnel feel depend on the computer group. Many Human resource managers regretted not having direct access to their own data. Some even longed for the old days of paper files.

Second Generation

As the 1970 advanced, the second generation of the computerized HRIS was initiated with the introduction of the Mini-computer. Mini-computers handle a network of simultaneous uses and have multiple input and output device. Minicomputer facilitated the transition from strictly batch processing to interactive processing. The second generation of computerized HRIS was completed in the early 1980s with arrival of the personal computer. The low cost standalone pc moved data processing to the desktop. The Data Repository was moved to the human resource professional desktop. Software proliferated and before long the human resource record keeping function was within reach of every size of organization. At the same time mainframe and minicomputer system were being made much more accessible and user-friendly. From a functional stand point, however human resource managers were doing their job in the same basic manner they always had. The one major difference was that computerization allowed them to do more and to do it more rapidly.

Third Generation

Moving the data repository from some mainframe or computer group to the desktop caused a great deal of excitement in the human resource field. Human resource professional began to see the possibility of new applications for the computers. Rather than merely computerizing what had been done manually, they visualized ways to use the computers to fundamentally change the way they performed the job. The basic idea was to integrate many

of the different human resource functions. Software vendors observed the desires of human resource professional and began to develop systems to integrate the various areas within their applications. The result was the third generation of the computerized HRIS, a feature rich, broad based, self-contained HRIS. The third generation took system far beyond being mere data repositories and created tools with which human resource professional could do much more. The extent to which the organization has developed their HRIS varies from organization to organization.

Organization Structure & Related Management Processes

Every program manager should be concerned about organizational structure, but it is often the last thing on his or her mind. An effective structure facilitates management and clarifies relationships, roles and responsibilities, levels of authority, and supervisory or reporting lines. By reviewing an organization's structure, a manager will be able to determine which human, financial, and technical resources are available, how they should be allocated, and which resources are lacking. Using an **organogram** — a graphic representation of an organization's structure — a manager will be able to define tasks, determine information flow within the organization, and ensure accountability for achieving organizational goals and objectives. Job descriptions should be assigned to all staff. These job descriptions should reflect the organizational structure and help each staff member to know his or her:

- Job title
- Specific tasks required
- Supervisor and subordinates
- Unit or department
- Minimum skills and/or qualifications required to perform the job.

Sometimes, in complex organizations, grades or salary bands are included to let the staff person know the level of his or her position. Because organizational needs and structures may change from time to time, job descriptions should be periodically — and systematically — reviewed.

Organizational structures often reflect the level of growth, or stage, of the institution. There are at least four levels of organizational growth recognized by management professionals; sometimes additional stages are included. The four stages are:

- Emergent- organizations at the beginning stages with fragile management, few systems, and limited resources.

- Launch or growth — organizations which have stabilized their structures, decided on their program or service mix, and are, therefore, ready to expand.
- Consolidation (organizations which have determined a strategic focus, strengthened systems, increased efficiency, and made progress toward greater sustainability.
- Mature — self-sufficient organizations which have the ability to effectively manage and adjust mission, strategy, structure, and systems in response to internal and external trends and challenges.

At each stage, an organization's structural requirements may be different. For example, a small emerging organization may not have a complex, multi-level structure with several specific units. On the other hand, a consolidating organization may propose several new units or an expansion plan in response to its past dynamic growth and its future strategic plans. Program managers should try to make sure that the structure is appropriate for the organization's size, resources and program mix. Organizations may differ in other ways that affect structure. For example, some organizations have paying members or extremely active volunteers. Representatives of these groups may expect seats on the Board of Directors, special meetings, or other activities to address their concerns and sustain their support. Sometimes their powers or participation are governed by laws; sometimes the organization sets policies delineating the levels and kinds of participation and whether specific benefits or remuneration can be expected.

Types of Organizational Structures

Organizations have various structures. These structures are indicative of:

- How an organization functions and is managed.
- How information flows and is processed within an organization.
- How flexible or responsive the organization is.

Organizational Structure Type

Following are the types of organizational structures that can be observed in the modern business organizations.

Bureaucratic Structures

Bureaucratic structures maintain strict hierarchies when it comes to people management. There are three types of bureaucratic structures:

Pre-Bureaucratic Structures

This type of organizations lacks the standards. Usually this type of structure can be observed in small scale, start-up companies. Usually the structure is centralized and there is only one key decision maker.

The communication is done in one-on-one conversations. This type of structures is quite helpful for small organizations due to the fact that the founder has the full control over all the decisions and operations.

Bureaucratic Structures

These structures have a certain degree of standardization. When the organizations grow complex and large, bureaucratic structures are required for management. These structures are quite suitable for tall organizations.

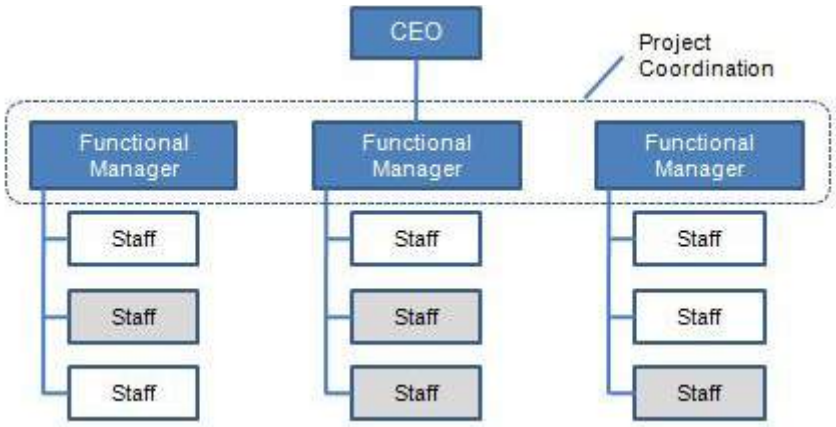
Post-Bureaucratic Structures

The organizations that follow post-bureaucratic structures still inherit the strict hierarchies, but open to more modern ideas and methodologies. They follow techniques such as total quality management (TQM), culture management, etc.

Functional Structure

The organization is divided into segments based on the functions when managing. This allows the organization to enhance the efficiencies of these functional groups. As an example, take a software company. Software engineers will only staff the entire software development department. This way, management of this functional group becomes easy and effective.

Functional structures appear to be successful in large organization that produces high volumes of products at low costs. The low cost can be achieved by such companies due to the efficiencies within functional groups. In addition to such advantages, there can be disadvantage from an organizational perspective if the communication between the functional groups is not effective. In this case, organization may find it difficult to achieve some organizational objectives at the end (see)



Functional Structure

Divisional Structure

These types of organizations divide the functional areas of the organization to divisions. Each division is equipped with its own resources in order to function independently. There can be many bases to define divisions. Divisions can be defined based on the geographical basis, products/services basis, or any other measurement. As an example, take a company such as General Electrics. It can have microwave division, turbine division, etc., and these divisions have their own marketing teams, finance teams, etc. In that sense, each division can be considered as a micro-company with the main organization (see).

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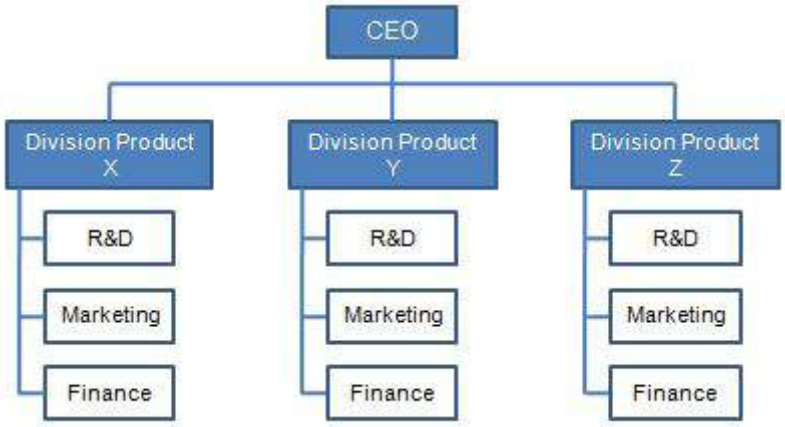
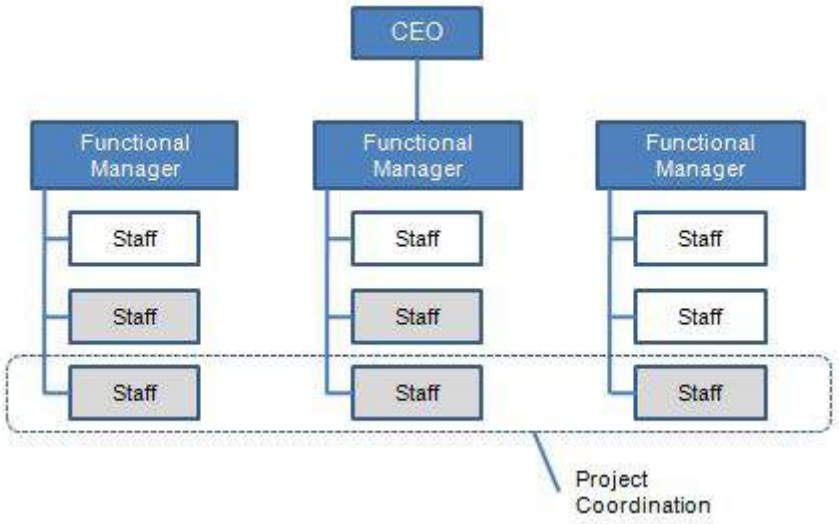


Divisional Structure

Matrix Structure

When it comes to matrix structure, the organization places the employees based on the function and the product. The matrix structure gives the best of the both worlds of functional and divisional structures. In this type of an organization, the company uses

teams to complete tasks. The teams are formed based on the functions they belong to (ex: software engineers) and product they are involved in (ex: Project A). This way, there are many teams in this organization such as software engineers of project A, software engineers of project B, QA engineers of project A, etc. (see)



Matrix Structure

Communication Process

HRIS helps to establish the quick & effective inter or intra communication in organization among its all levels. Several ERP packages are having the options to communicate through different ways e.g. memos, report, notes, voice chat or text chat, profile status updates etc. All these communications are possible in different types of organizations,

The Flow of Communications at the Organizational: Communication is much more than talking, speaking and reading. True communication takes place when an understanding has been transferred from one party or source to another. Therefore, communication can be defines as the transfer of information that is meaningful to those involved. In this light, each and every one of the human resource functions discussed requires some degree of effective communication to succeed. For example, think of the important role communication plays in career planning, recruiting and performance appraisal. In all too many instances, Human resource managers spend tremendous amounts of time developing very good programs, only to subsequently do a poor job of communicating them. The end result is often great programs that go largely unused. The two dynamic systems of communication in business are internal and external communications. But the emphasis is quite distinct. In internal communications, emphasis is in presenting and interpreting facts. In contrast, in external communications, emphasis is on promoting goodwill and future business.

Internal Communications

The following is an example of a hierarchy chart. It shows the positions of Superiors and subordinates in a company. All communication among the employees is INTERNAL because they are co-workers. A human resource Manager's first step in becoming an effective communicators is to develop an appreciation for the importance of communication. The problem is not that human resource managers tend to belittle the importance of communication; rather, they often fail to think consciously about it.

Organisational Culture

Definition: Organizational culture is defined as the shared values, norms and expectations that guide organization members in terms of how to approach their work and deal with each other and their customers. Organizational Culture is a key determinant of staff satisfaction, intention to stay and whether staff recommends they're organizational to others as good place to work.

Role of HR

_____ Contributes to the development of and the accomplishment of the organization-wide business plan and objectives

_____ Plays an integral role in organizational success via his knowledge about and advocacy of people

_____ Contributes to the organization by constantly assessing the effectiveness of the HR function and sponsors change in other departments.

Culture of the organization plays a key role in determining a structure that would suit. The organization stance towards participation and risk-taking will have an impact on the decision pertaining to number of levels and delegation of authority. Congruence between culture and structure is important. Lack of congruence can result in mixed signals across the organization. An example is where an organization states an intention of providing an environment of independence (autonomy)—and yet, has the most routine issues kicked up for a decision. Such lack of congruence can result in senior and middle management losing their effectiveness. To reiterate, it is important to ensure a match between the culture and the structure. It is also important to factor competencies of existing people while making changes to structures. Can some of the existing people shoulder additional responsibilities? Do some of them have the versatility to move to other functions or divisions? Will the structural changes need hiring of people into key positions because existing people do not

have the necessary competency? This needs to be handled well to enable the organization to settle into the new structure and continue working with its objectives. Changes in structure will result in changes in roles and responsibilities. The new roles need to be defined with clarity; so do the changes in interfaces.

For example, let us consider the case of an organization that changes its customer support operation from a cost centre to a profit centre. This could affect the reporting relationships in the internal context and also the interfaces with the customer. The responsibility and authority of the head of customer support will change considerably. This could affect the systems and processes in the organization. This is a case where a change in strategy results in changes in the structure, systems and interfaces in the organization.

External Factors

External factors need to be taken into account while evolving the structure. Some of these may have been taken into consideration during the creation of the business strategy. Aspects such as competition, duration of sales cycle, complexity of the sale, risk factors due to the environment, etc., will affect design of the structure. All these aspects—internal and external—need to be taken into account while designing or changing the structure. It is important to remember that the structure is a means to achieving an end; the design of the structure is not an end in itself. The reasons for the change need to be communicated across the organization and people may need to be trained and coached. It takes time and energy to implement changes in structure. Therefore, ownership across the organization is necessary. It does take a while for a new structure to settle down; however, the environment keeps changing, business requirements change and there are many factors (both internal and external) that can cause misfit between the structure and the business need. Flexibility becomes key in implementing structure changes in a highly dynamic environment.

Data Capturing for Monitoring & Review

The Overriding purpose of any HRIS is to assist human resource managers and other top managers in making sound decisions. If this is to be accomplished, the HRIS must produce information that is useful to the organization. Unfortunately, many human resource information systems are disappointments to managers simply because they do not produce the types of information management values. The problem is often that the managers designing the HRIS do not have a thorough understanding of what constitutes quality information to the users of the information. If the information provided:

(1) Accuracy,
(2) Significance and relevance,
(3) Comprehensiveness,
(4) Readability and visual impact, and
(5) Consistency of format.

Producing information that is of quality to the user obviously requires an investment in time, effort and communication on the part of HRIS managers. However, this investment can result in an information system that wins the respect of top management and one it can depend on. The evaluation should determine whether or not the HRIS has performed up to its expectations and if the HRIS is being used to its full advantage. Some basic performance issues can be addressed to help evaluate an HRIS.

1. Compare the time spent on data entry to the value of the reports generated. Is this time well spent?

2. Compare the system response time for data entry and inquiry. Does the screen come up immediately or is there a considerable delay?

3. Does the system have real-time, online and immediate update capability If not the system is antiquated by today's standards.

4. Is the HRIS interfaced or integrated with the payroll system? If the HRIS is a stand-alone system that has data entry element that are duplicated and entered on the payroll system, the answer to this question is no.

5. Does the system have the capability to produce reports that provide answer to specific functional questions? For example can an individual quickly receive information concerning the turnover rate in the finance department?

6. Does the system use inquiry rather than pulling employees files to answer questions? If files must be pulled the system inquiry capabilities have not been properly designed.

7. Does the system generate the proper type of information? A good HRIS should generate more adhoc, on request reports that regular monthly detailed reports.

8. Analyses the cost to implement and maintain the current system, This includes such things as machine and software costs, maintenance agreements, supplies and hourly salaries of data entry operators and programmers. How do these costs rate against the time saved by the system?

Addressing the preceding questions should indicate whether the organization has a useful HRIS and if the HRIS is being used to its full advantage. Such an evaluation may also reveal a need to show end users how to better utilize the system.

Behavior Patterns of HR & Other Managers

The recent global economic slowdown and its impact on the Indian software industry, provides us with an opportunity to review the state of the Human Resources (HR) function in a highly people-intensive business. Looking back, one can clearly distinguish two phases of evolution in the HR function. The first phase, which was dominated by the extraordinary decade-long growth in the Indian software industry, the HR function was primarily driven by the need to bridge the vast demand-supply gap of skilled software resources. This was accentuated by very high attrition rates, sometimes reaching as high as 40% p.a.! In these circumstances, it was natural that the recruitment aspect of HR was in the forefront. People development and team-building initiatives were not successful in this uncertain environment, where there was a constant churn out of people. In retrospect, this phase neither helped the organization nor the people, as it hampered the steady growth of knowledge and skills technical, behavioral as well as managerial. Today, high attrition rates have become history (hopefully forever)! This has been driven by the significantly reduced demand-supply gap, as well as a willingness of employees to build and invest in a relationship in their existing organizations. Software professionals are reviewing their career growth within their organizations and settling for stability instead of frequent job changes. This has become possible with several software organizations in India offering much more exciting opportunities coupled with increasing doubts about insecurity of overseas jobs. Aided by this relatively stable people situation, HR has entered a new phase in the Indian software industry. HR in the software industry needs to embrace strategies to sustain stability, develop people and improve productivity.

Strategies to Enhance Employee Skills

To begin with let us look at the performance evaluation system. There is a great need to ensure that it covers every aspect of people development with a strong emphasis on behavioral traits such as:

- Teamwork
- Conflict resolution
- Responsiveness
- Sharing of knowledge and best practices.

It is worth noting that the behavior of individual employees and teams influence the overall culture of the organization, and can strengthen or dilute its core values. The importance of assessing the behavioral patterns of individual employees increases as the employee climbs the career ladder. Once a person attains a people management level there is a need to critically evaluate the individual's behavioral traits.

Performance Evaluation

While we always identify areas of growth and high performers in the organization, one must be conscious of those people who need improvement. Strategic plans must be in place to enhance the performance level of employees, which are below par. This may not just be due to skills mismatch. Many a time, the concerned person may not integrate well with the organization's culture, or simply not fit into the team; last but not the least, the employee could be a perpetual poor performer.

Even when performance evaluation systems adequately cover the above aspects, the gaps need to be constantly identified and bridged.

In addition, a successful performance evaluation system will need a well-defined succession plan. This must be carefully prepared by evaluating the skill set of the incumbent based on which, managers have to make an assessment of the possible successor. Occasionally there will be gaps; it means that the identification of the successor within the organization is ruled out. In such cases, the management will have to evaluate the intensity of such gaps and take a decision.

Rewards and Recognition

Let us move onto yet another critical HR tool -rewards and recognition. They are an important method of keeping employees focused on their long-term career goals. However, reward systems must undergo changes to be relevant and keep pace with the dynamism of people. They need to be exciting for people and have a substantial, positive impact on the organization's culture.

Another important factor that will work to the advantage of the people and the organization is the nurturing of a unique culture that can bond, attract and retain talent. With people becoming more loyal to their organizations, there is a strong need to build and sustain people bonding with them. Various social, emotional and psychological factors that help in creating a community and a sense of belonging need to be addressed.

Knowledge Management

KM can be a key tool to facilitate bonding. The concept of sharing knowledge and providing "learning windows" apart from the normal training and skill enhancement programmers will go a long way in creating a unique culture in an organization developing "people through people".

Empowerment:

Increasing empowerment and encouraging employees to think, sharing ideas and providing freedom of enterprise can sustain retention of high performers. Best Practices: Nurturing and developing unique organizational standards like Knowledge Development can contribute towards building its culture that will be a clear "competitive and strategic advantage". Today the software industry is in a state of flux, where fast changing business dynamics have transcended cultural and geographical boundaries. In this scenario, organizations must be alert and be in a position to anticipate change and develop strategies to counter change. Being pro-active and developing ownership at all organizational levels must be the new buzzwords of HR. It needs to nurture people who can adapt to changes in the organization structure, forms of work and the nature of work itself.

Information Processing for Decision Making

As with any major change, proper planning is an absolute necessity for successful implementation of an HRIS. The steps outlined below describe the specific procedure involved in successfully developing and implementing an HRIS.

Inception of Idea

The idea for having an HRIS must originate somewhere. The originator of the idea should prepare a preliminary report showing the need for and HRIA and what it can do for the organization. This preliminary report should be designed to get management's attention. The most critical part of this step is to clearly illustrate how an HRIA can assist management making certain decisions.

Feasibility Study

The feasibility study evaluates the present system and details the benefits of HRIS. It evaluates the costs and benefits of an HRIS by showing the labor and material savings compared to the cost of the system. It also evaluates the intangible savings, such as

increased accuracy and fewer errors. Of course, it is possible that the feasibility study would recommend against an HRIS.

Selecting a Project Team

Once the feasibility study has been accepted and the resources allocated, a project team should be selected. The project team should consist of a human resource functions and activities and about the organizations human resource functions and activities and about the organization itself and representatives from both management information systems and payrolls.

As the project progresses, additional clerical people from the human resource department will need to be added.

Defining the Requirements

Requirements statement specifies in detail exactly the role of HRIS. A large part of the statement of requirements normally deals with the details of the reports that will be produced. Naturally, the statement also describes other specific requirements.

The typically includes written descriptions of how users collect and prepare data, obtain approvals, complete forms, retrieve data, and perform other no technical tasks associated with HRIS use. The key here is to make sure the mission of the HRIS truly matches management's needs for an HRIS.

Vendor Analysis

This step determines what hardware and software are available that will best meet the organizations needs for the lowest price. This is a difficult task. The best approach is usually not to ask vendors of a particular package can meet the organizations requirements but how it will meet those requirements. The results of this analysis will determine whether to purchase an "off-the-shelf" package or develop the system internally.

Package Contract Negotiation

After a vendor has been selected, the contract must be negotiated. The contract stipulates the vendors responsibilities with regard to software, installation service, maintenance, training, and documentation.

Training

Training usually begins as soon as possible after the contract has been signed. First, the members of the project team are trained to use the HRIS. Toward the end of the implementation, the human resource representation will train managers from other departments in how to submit information to the HRIS and how to request information from it.

Tailoring the System

This step involves making changes to the system to best fit the needs of the organization. A general rule of thumb is not to modify the vendor's package, because modifications frequently cause problems. An alternative approach is to develop programs that augment the vendors programmed ration than altering it.

Collecting the Data

Prior to start-up of the system, data must be collected and entered into the system.

Testing the System

Once the system has been tailored to the organization need and the data entered, a period of testing follows. The purpose of the testing phase is to verify the output of the HRIS and to make sure it is doing what it is supposed to do. All reports should be critically analyzed for accuracy.

Starting Up

Start-up begins when all data and current actions are put into the system and reports are produced. It is wise to attempt start-up during a lull period so that as much time as possible can be devoted to the HRIS. Even though the system has been tested, some additional errors often surface during start-up.

Running in Parallel

Even after the new HRIS has been tested; it is desirable to run the new system in parallel with the old system for a period of time. This allows for the outputs of both systems to be compared and examined for any inaccuracies.

Maintenance

It normally takes several weeks or even months for the human resource people to feel comfortable with the new system. During this stabilization period, any remaining errors and adjustments should be handled.

Evaluate

After HRIS has been in place for a reasonable length of time, the system should be evaluated. Is the HRIS right for the organization, and is it being properly used?.

Self Assessment Questions

1. Explain the behavior pattern of HR and other manager in the organization?
2. Explain the steps for information processing for decision making?
3. Explain the Flow of Authority and responsibility by depicting the chart?
4. Explain the procedure of communication process?
5. Define organizational culture and explain its role?
6. Explain the concept of data capturing for monitoring and review?

CASE STUDY

Motorola implement a new human resources system

When an international firm asked Anderson Consulting to devise a new human resource package, savings of £2 million a year were made In 1997, Motorola decided to replace the paper-based system it used to process human resource and payroll information. As error prone and inefficient as this paper-based system was, more serious was the lack of standard human resources practices. Motorola SPS operates in over 50 countries and has 30 factories worldwide, including sites in the US, Europe and the Far East, and it was proving hard to track varying human resource policies in different territories. Motorola SPS approached Andersen Consulting to devise and implement a new system that would solve these problems.

The human resource system that Andersen Consulting envisaged would be required to perform two main tasks:

(To collect and process human resource and payroll information

(To allow both managers and employees access to this information

"Our ultimate goal is to build a global human resources system infrastructure in which managers and their employees can use the human resources system, along with third-party service providers, to process human resources-related data." Andersen Consulting.

To provide a consistent base of human resource information worldwide, Andersen Consulting recommended the use of SAP's R/3 Human Resource System version 3.0 as the software standard for processing employee and payroll data. During the 16-month duration of the project, Andersen also acted as advisor in the configuration of the system, establishing a base of operations within Motorola SPS to handle employee training and collect information from vendors.

Use of a single method for processing data brought Motorola, one step closer to standardizing human resource transactions. Now, employee data from any international territory could be processed and stored in the same way. The new system also allowed Motorola to centralize all its human resource data for the US in a single facility - the Service Centre in Phoenix, Arizona.

However, this was only one aspect of the project. To allow managers and employees to access this data, a custom network had to be designed. This was dubbed ENET - The Employee Self Service Network.

ENET, an intranet-based, system was devised with two main functions in mind. On one hand, employees were able access their own personal data using a web-browser. On the other, managers were able to check and approve the status of personnel transactions such as a change in job or salary. Additionally, ENET was also designed to link other types of information including career development materials, details of courses in the Motorola University and documents on company policies.As standardization of human resource policy was such a key area of concern, ENET was designed to check data automatically, ensuring a common format was established, reducing the need for manual data validation. Crucially, adopting an intranet based application such as ENET allowed Motorola SPS to establish an International Human Resource policy, defining set practices in areas such as salary adjustments, departmental changes, processing new employees and changes in status of current employees. Any changes in human resource policy could now be implemented simultaneously in all territories.

Between 1997 and 1999, the new ENET/SAP system was established in all Motorola SPS territories including sites in the US, Hong Kong, Europe and the UK. The initial Andersen Consulting development team of 16 was reduced to a support team of six. Motorola SPS is expected to save approximately £2 million a year by reducing the amount of time required for basic administrative tasks in human resource departments. Updates of the ENET are currently being planned to include greater facilities for processing more specific employee data such as personal skills or languages.

"The way E-net has changed the way I interact with my managers and employees means that I have 100 per cent faith in being able to provide information that I know is available and accurate. It creates a lot of pride in the human resources organization and energy around promoting this system. I'm not afraid that ENET is not going to deliver, it already has." - John Morgan, human resources manager, Motorola SPS.

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UNIT – V

Unit Structure

Lesson 5.1 - Security and HRIS

Lesson 5.1 - Security and HRIS

Learning Objectives

After reading this chapter, you should be able to understand

- Understand the importance of Security in HRIS
- Understand the common problem during IT adoption process
- Opportunities in HRM & ITES
- Understand the importance of HRIS & Employee Legislation

Security, Size and Styles of Organisations & HRIS

Introduction

Peter Drucker remarks that 'the test of a healthy business is not the beauty, clarity or perfection of its organizational structure. It is the performance of people'. Since people operate systems and effectively form part of them, good systems performance requires good people performance. And if the individuals operating a system do not perform well — through ignorance) indolence, negligence or ill-will — that system will be defective or max' even fail completely. The special needs and concerns of security systems make particular demands in regard to staff loyalty, efficiency and cohesion, and impose quite severe requirements for the planning, control and monitoring of the human input. These priorities must be addressed in an organization's security managers and the related issues of team commitment and ethical behavior must be seen to be important in its corporate culture.

Security ranks as a top priority for any HRIS. Security needs to be addressed to handle the following situations:

- Exposure of sensitive Payroll and Benefits data among employees
- Loss of sensitive personnel data outside the enterprise (such as the Social Security Number)
- Unauthorized updates of key data such as salary amounts, stock options (both quantity and dates), and so on
- Sharing of personnel or applicant review—comments to unauthorized employees

The Importance of Understanding the System

When planning the training of staff, it is important to consider face-to-face consultations, discussions and briefings between groups of employees and their managers. Although meetings can disrupt normal working schedules, the benefit lies in the opportunity for people to ask questions and to feel that they are, to some extent, in control of the process of change. Once the staff feels that they have some ownership of the concepts underlying the new systems, it is sensible either to prepare accessible documentation which assumes nothing and is regularly updated, or to provide computer-based training (CBT) systems whether stand-alone, or embedded in the operating system or the resources themselves. In theory, staff will then be able to rapidly familiarize themselves with the relevant procedures. In practice, however, help-lines and readily available people to advise are essential if difficulties and prejudices are to be overcome.

This desire to train people and to produce flexible and effective employees must be seen against the need, in some organizations, to control and restrict general access to information about the operating procedures. If some procedures and facilities are sensitive, the answer is that all these procedures should be designed bearing in mind the level of security required in each aspect of the office environment. But the levels of security specified for the design must be realistic. Hence, levels of security appropriate to mainframe operations in a sensitive government establishment will not be appreciated nor be appropriate in a conventional commercial office. Moreover, whatever the overall system in operation and the level of security considered appropriate, the staff should understand why things are to be done, what policies underpin those procedures, and what the likely effects of applying those procedures will be to them. People are generally more supportive if they understand the reasons for the system. Finally, the organization will consolidate the loyalty of its staff if it is seen to meet the moral and statutory requirements of providing a working environment which is both healthy and safe.

Security Planning for People

To commit a computer fraud, the criminal must have access to the computer so both physical and logical access must be controlled, and planning must take account of known vulnerabilities. Once access has been achieved, most frauds depend on the falsification of input. Most frauds have obvious symptoms, and the principal detection strategies rely on noticing deviations from the norm. Once management suspicions have been raised, a good rule is to follow the asset and to ignore the apparent records.

Similarly, if documents are missing, the auditor should suspect the person who would have been suspected had incorrect documents been found. In the short term, the bonus expected from the investigation is recovering part or all the assets lost in the immediate fraud. But the main objective in prosecuting detected fraud is long-term deterrence. To that extent, being seen to engage in the investigative process is an aspect of the ongoing function of personnel management and it is intended to affect staff attitudes. It should not be seen to a mere by-product of standard auditing. To give it the necessary independence and authority within the organization auditing is a function that requires separate resourcing. Once established, the auditor's first task is to identify and watch all the vulnerable points. This can usually be done discreetly, say by analyzing historical trends or by testing reasonableness in comparisons between branches or with other similar companies. The aim should always be to avoid any prejudice to employer/employee relations. But checks can never be restricted to statistical methods. sampling checks should always be made on individual items, regardless of the possible threat to labor relations. Hopefully, if the auditing staff have properly trained, and the staff to be investigated have a constructive view of the process, there should be minimum friction arising from the disruption to the established routines.

- Sharing data with external organizations and service providers, such as those described in the Recruitment, Payroll, and Benefits.

Security needs to be maintained at a variety of levels. First, physical access to the DBMS and application server needs to be limited so that machines cannot be destroyed or logged into directly. Network, operating system, and DBMS access must be limited so that tools outside the HR application cannot be used to query sensitive data. This includes hackers directing probes at the systems or using a variety of techniques to gain access. In the case of external users, special network access may need to be set up. A virtual private network (VPN) can be implemented so that users outside the company can log into the computing resources as if they were within the firewall. Alternatively, many HRIS applications provide specially built "portals" that enable Internet browser access to specific components of the system. This leads to segregation of users into different security categories. All enterprise-

level HRIS implement their own level of security on top of the operating system and DBMS. Typically, this security is administered via users and user roles. A user of the system is assigned a security role (such as Recruiter, Benefits Administrator, Manager, Payroll Administrator, or basic Employee). Then each role can be assigned to access certain parts of the system. Security can thus be limited or allowed along three dimensions—the role, the column, and the row of the HRIS database:

1. What menu items, links, pages, or screens can the user role access? For example, only the Payroll Administrator should be able to see links to the Payroll setup and execution processes. The average employee would not know that these pages exist.

2. Once on a particular page or screen, a specific user role may be able to edit or change certain fields. This is called column-level security. An ordinary employee, on the other hand, would be able to view only his or her own Job Title and Salary information and would not be able to change these values.

3. Also, within a particular page or screen, a specific user role retrieves only the data belonging to that user. This is called row-level security. For example, employees can view their own check stub history for prior weeks' payment. But they cannot access other employees' history. Row-level security supports hierarchical access—the greater the number of persons who report to an employee such as a manager or a supervisor, the more the quantity of data that becomes viewable. In some cases, managers may need to allocate bonuses across several departments. Employees can see only their bonuses, while managers can edit the bonus data of all employees reporting to them.

Within the typical corporation, the HR function exists primarily as support for the operational components of the corporation (Sales, Marketing, Procurement, and Manufacturing). In the same way, HRIS support the general ERP system operations. Employee information must be shared between Procurement and HR so that approval processes can be maintained. Employee data are also shared between Sales Force Automation and Payroll to determine commissions. There exist many other examples that demonstrate the need for HRIS to be integrated within the ERP. This heightens the need for security in the HRIS database because it is important to enable business processes that span information silos and eliminate data redundancy.

When planning the administration of security matters, the organization should identify a specific individual who is to have the responsibility for advising on and maintaining security. This should be a senior management post, visibly supported by the most senior managers. The function should be to advise both horizontally and vertically within the organization, and to assume overall responsibility for the enforcement of obligations at all

levels within the organization and against third parties. The creation and support of such a post will, in the event of subsequent legal action, show that the management was acting prudently. But the appointment must not be in a vacuum. It should be made with very sped5c responsibilities for the post holder in respect of the:

- Organizational procedures for the screening and appointment of staff
- Criteria of confidentiality for the classification and protection of information
- Commercial and ethical screening of new investment opportunities both internal and external to the organization
- Prevailing statutory and professional data protection standards
- Strategies for contingency planning
- Practice of incident reporting within the organization.

The depth and detail of these responsibilities will, of course, vary with the size and complexity of organization involved. There also has to be significant commitment to education and training at every level within the organization so that the process of change can be properly managed. All those actually or likely to be affected by changes in working practices must understand the new systems and the problems of using them efficiently. Even after these changes have been introduced, employees who do not begin using the systems immediately will need refresher courses, and those who have regular practice should be shown how to consolidate and improve upon their skills and be updated in any amendments to the systems. It is a good policy to ensure that all relevant staff are well versed in the standard operating procedures. This will allow for covering if colleagues are absent from work for any reason, and for a good response in the event of an emergency when flexibility of response from employees may be the key to a successful recovery.

Common Problems during IT Adoption Efforts and Processes to Overcome

Information technology (IT) adoption in organizations has been extensively researched within the information systems field. Using IT to improve efficiency and create competitive advantage has been a major focus for organizations in the past few decades. However, adopting information technology successfully has not been without its challenges.

Systemic Issues in It Adoption and Systems Thinking

It is widely acknowledged that organizations increasingly depend on Information Technology for the execution of a variety of operational, tactical, and strategic processes (Applegate et al. 2003). Despite the numerous success stories illustrating the advantages of

bringing information technology into organizations, it is broadly accepted that the processes of designing, developing and implementing an Information System (IS) are cumbersome and not straightforward. Recent and older reports show that IS projects frequently fail. One of the most intriguing questions is: why do IS still failing if we know what causes a failure? The answer is that we still do not really understand the nature of IS failures. In these projects, various factors interact with each other leading to a complex amalgam that is hard to identify.

If additional problems occur or if the root causes of the original problems are not effectively addressed, the problems grow worse. Not all causes of failure have an objective nature or seem to be connected with technology but tend to lean on fashion, perception, expectancy, pressure, internal or external politics and cognitive processes. Smith and Keil (2003) believe that some failures involve psychological, social and organizational issues that cannot be addressed with techniques such as the critical path method or joint application development. Long lasting organizational problems are often as a result of 'systemic problems'. We argue that systemic problems are fundamental difficulties related to motivation of staff, structural difficulties, competing stakeholders, and opposing world views that exist in organizations.

Based on the work of researchers, problems faced by organization in planning and managing technology transfer may be classified into three categories namely, technology transfer process issues, corporate capability issues, and operating environment and Macro environment issues. The problems are summarized below.

(a) Technology Transfer Process Issues

Problem During the Technology Justification and Selection Stage

- Wrong selection of technology based on misjudgments when preparing a business case for a TT (Technology Transfer)/TA (Technology Adoption) project
- The cost of buying, installing, operating, and maintaining the technology is too high
- The technology selected is too complex for easy understanding and assimilation of the transferee
- The technology needs considerable adaptation to suit required conditions
- Obsolescence of technology while the transfer is in progress. These days IT is experiencing high volume of R&D therefore a new product very often comes into market and made earlier one old fashioned.

Problems During the Planning Stage

- Transferor (seller) underestimates the problems in transferring the technology to a developing country setting
- Transferor does not fully understand transferee needs
- Transferee managers are not involved in the planning which is carried out only by the transferor. The final decision of TT/TA is being taken by high level management not by the operational level.
- Overestimation of the technological capabilities of the transferee by the transferor thereby leading to unrealistic expectations on how well the transferee can meet target dates
- Uncertain market demand forecasting by the transferee of the outputs to be produced by using the transferred technology
- The objectives of the transferor and transferee are not compatible
- Mechanisms chosen for implementing the transfer are not appropriate

Problems During Negotiations

- Differences in negotiation approaches and strategies
- Goal incompatibility during negotiations
- Inability to reach agreements on pricing, product, and marketing strategies
- Both parties try to achieve results in an unrealistically short period of time

Problems During Technology Transfer Implementation

- Shortage of experienced technology transfer managers
- Lack of trust in transferor developed systems by the transferee
- Inability to achieve quality targets
- Delay in obtaining additional assistance, needed for quick implementation, from the local environment
- Cost overrun due to poor implementation

(b) Corporate Capability Issues

Problems Due to Inadequate Skills

- Inability of the transferee to attract the required skills due to financial and industrial restrictions
- Lack of experience of the transferee's workforce and absence of required skills at the industry level
- Lack of training of transferee personnel
- Absence of incentive systems at the transferee firm for learning and assimilating new technologies
- Lack of trust between transferor and transferee organization/personnel and restrict effective transmission and assimilation of relevant information

Problems Due to Ineffective Management

- Lack of visible and committed top management support for the project
- Lack of top management guidance to decide the type of the technology to be acquired, remuneration, incentives associated with the transfer, and the control of the flow of information.
- Differences in working methods and practices between the transferor and transferee managers
- Individual or organizational competition for the ownership of the technologies and the presence of the "not-invented-here" syndrome

(c) Macro Environment Issues

- Shrinking of markets due to adverse changes in the economic levels
- Poor infrastructure support (i.e. Power, Communication, and Transportation etc.)
- Inadequate supportive institutional infrastructure to provide support in terms of finance, information, skill development, and technology brokering
- Inadequate mechanisms for intellectual property protection
- Lack of suppliers who can deliver quality supplies and lack of policies to develop such suppliers
- High dependency on foreign suppliers and imports

- Lack of good education and training institutions to upgrade skilled human resources
- Ineffective or Uncertain Policies, legislation and incentives such as tax, tariff adjustments, and industry parks to promote technology transfer
- Bureaucratic delays at various levels of government in obtaining approvals and clearances for finalizing technology transfer agreements, if any.
- Ineffective and sometimes excessive government intervention and regulation
- Foreign exchange restrictions
- Inability of new ventures to compete with former dominations.

Processes to Overcome m Orientation & Training Modules for HR & other Functionaries

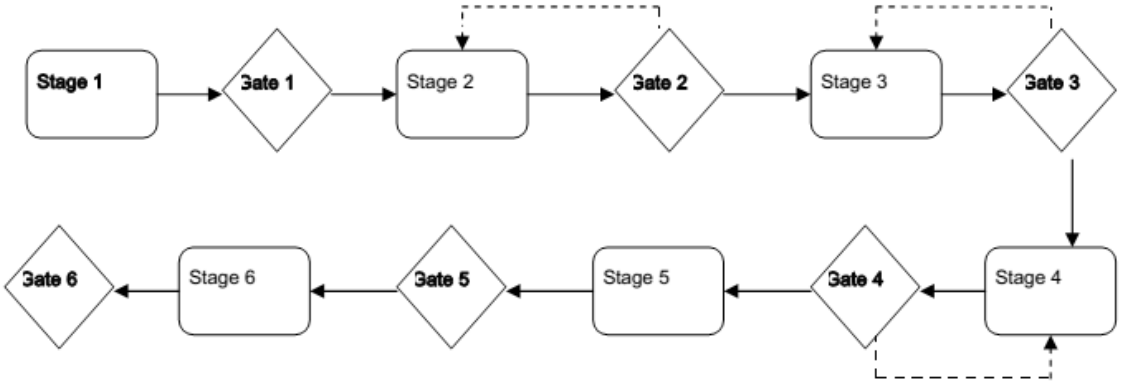
There are several methods to overcome from this issue. Any approach to resolve this issue require careful and systematic way. It doesn't mean that the process itself became cumbersome and over budget. Though there are the chances for this also but a cautious effort can bring the positive changes. Here is one of the methods to resolve this issue. It is basically a combination of "Strategic Management" & "Change management" concepts.

Life Cycle Approach for Planning and Implementing a Technology Transfer Project

The "Life Cycle Approach for Planning and Implementing a Technology Transfer Project" is based on the stage-gate structure developed by Jagoda and Ramanathan (2005) for developing a systematic approach for planning and managing ITT. For the sake of convenience and expository ease, henceforth this model will be referred to as the TTLC (Technology Transfer Life Cycle) approach. The TTLC approach takes a holistic view of a TT project from its "conception" right up to its "conclusion" and is based on the recognition of the fact that a life cycle of a TT project can be looked at from a process perspective as consisting of six major stages as follows.

- Identifying the technology needed and making a business case to obtain corporate approval
- Searching for possible technology sources and assessing offers
- Negotiating with short-listed suppliers and finalizing the deal
- Preparing a TT implementation plan
- Implementing and assimilating
- Assessing the impact of the TT project

This life cycle has been developed based on the lessons learnt from the study of popular models of technology transfer that have been reviewed in the previous section of this paper. The major stages in the life cycle are shown schematically, as below ():



Flow chart of Life cycle approach

tIt can be seen that, in this generic framework, each stage is associated with a gate. The stages are made up of prescribed tasks with cross-functional and simultaneous activities. The gate or controlling point is at the entrance to each stage. Using the information generated at each stage, in-depth and critical evaluation is carried out at the gate that follows the stage.

Based on the evaluation, a decision may be taken to go forward, kill the project, put it on hold, or recycle it. It is envisaged that, through this approach, proactive measures could be taken to avoid or minimize problems thereby enhancing the chances of successful TT. The main advantage of such an approach is that it could ensure that major activities are not carried out carelessly or even missed.

Stage 1: Identifying CVD enhancing technologies

Gate 1: Confirming identified technologies

Stage 2: Focused technology search

Gate 2: Technology and supplier selection

Stage 3: Negotiation

Gate3: Finalizing and approving the TT/TA agreement

Stage 4: Preparing a TT project implementation plan

Gate 4: Approving the implementation plan

Stage 5: Implementing technology transfer

Gate 5: Implementation audit

Stage 6: Technology transfer impact assessment

Gate 6: Developing guidelines for a new project

Stage 1: Identifying CVD Enhancing Technologies

All enterprises whether they are large firms or small organization can compete effectively only on the basis of **"customer value creation."** Customer value may be defined as a function of quality, delivery, flexibility, convenience, and cost. Quality represents how well a specific good or service meets customer expectations. Speed describes the time needed to design, produce, and deliver the good or service as characterized by determinants such as cycle time and speed to market. Flexibility reflects how easily and quickly the firm can modify goods or services to meet customer needs in terms of aspects such as options and extent of customization possible.

Creating convenience for the customer implies not only speed of service, but also self-service, process visibility, and easy to use, streamlined, consistent, and reliable customer service. Lastly, cost refers to all objective and subjective costs that the customer incurs to acquire, use, and dispose of the good or service and includes dimensions such as discounts, rebates, and incentives. Customer value is enhanced as quality, speed, flexibility, and convenience increases while cost decreases. These five determinants of customer value creation may be referred to as core value determinants (CVDs). To ensure sustainable competitive advantage a firm must offer its customers a CVD profile that sets it apart from its competitors. Thus, in Stage 1 what is important is for the transferee firm to decide what technology or technologies it needs to create a unique CVD profile that will enhance its competitive edge vis-à-vis its competitors. The key activities that must be carried out at this preliminary stage of the technology transfer project are the following.

- An informal technology transfer steering committee (TTSC) is set up to study how competitors are using technology to enhance customer value and what technologies are available that could deliver even greater value.
- A list of technologies needed is developed and technology roadmaps are constructed to understand future trends of these identified technologies.
- Information for this is obtained through Internet searches, study of technical publications, exchange of communication with potential suppliers of technology, contacts with universities etc.
- A quick market assessment that examines market size, market potential, and likely market acceptance of the proposed initiatives is carried out, mainly through the use of marketing expertise and contacts with key users.
- A technical assessment is also carried out to estimate, approximately, the resources and capabilities needed to adopt the new technologies, time needed, costs involved, likely risks, and possible barriers (Including policy, legal and regulatory aspects).

Gate 1: Confirming Identified Technologies

Gate 1 is a "critical but supportive" screen. The decision-makers, usually a top management team, develop a set of "must meet" criteria to review the proposal. The criteria could include:

- Strategic alignment
- Project feasibility in terms of technical and resource considerations
- Magnitude of opportunity
- Market attractiveness
- Sales force and customer reaction to the proposed technology
- Regulatory, legal, and policy factors

Financial returns are usually assessed at this gate using simple financial calculations such as payback period. The decision-makers will, at this gate, modify, confirm the composition of the TTSC which will then be in charge of the project.

Stage 2: Focused Technology Search

This is probably the most important stage where detailed investigation is carried out by the TTSC. It is here that a strong business case for the technology transfer is built.

This includes specifying in detail the following:

- How the technology sought is expected to enhance customer value by influencing the CVDs
- What components of technology are needed (hardware, skills, information, and organizational arrangements)
- The extent to which the abilities to use the technology are available in-house and what gaps have to be bridged
- The resource commitments needed and the expected benefits
- Prioritized shortlisting of suppliers for the technology based on their business strategy, technological capabilities, experience in handling TT/TA projects, past performance, and cross-cultural expertise.
- Competitive analyses to assess the impact of the technology sought on competitiveness

Based on a consideration of these aspects, a business case is developed that includes clear technology specifications, discounted cash flow (DCF) analysis, project justification, and business plan. Development of this business case requires multidisciplinary interaction and cross-functional cooperation. If this stage is carried out poorly it could have adverse impacts at the remaining stages and cause serious difficulties.

Gate 2: Technology and Supplier Selection

This is the final gate prior to the formal negotiation and launch stage where the project can be killed before it enters a heavy spending phase. This gate gives the go-ahead for a "heavy spend." Gate 2 critically examines the analysis of Stage 2 and rechecks against the major criteria used in Gate 1. The following steps need to be followed very carefully at this gate.

- All suggestions with regard to technology choice, components of technology needed, and capability gaps to be bridged, resource commitments needed, expected benefits, and supplier profile ratings are critically examined.
- The technology will be assessed very rigorously using techno-economic, socio, and politico-legal factors.
- The preferred supplier ranking will be reassessed rigorously based on strategic fit and process support capability and may be modified from the ranking proposed in Stage 2.
- The financial analysis (DCF) is rechecked very rigorously here.
- The TTSC may have to revise the analysis in the light of the critical evaluations (as indicated in the figure) and submit the new analysis for further evaluation.

If the decision is a Go-decision then the TTSC is converted to a full technology transfer project team that is empowered, multifunctional, and headed by a leader with authority.

Stage 3: Negotiation

This is a critical stage where the TTSC now negotiates with the shortlisted suppliers. A critical issue in TT negotiation is the valuation of the technology to be transferred. The extent to which both parties can influence price depends on their respective bargaining power. The transferor's power arises out of the resources possessed such as ownership of a desired technology, brand name, reputation, management expertise, capital, and

international market access. Transferee power often tends to have its roots in local knowledge and networks, access to local markets, raw materials and low cost labor, and political connections. To ensure effective negotiation, frequent contact and communication between both parties is imperative.

The following activities need to be carried out at this stage.

- Agreeing upon a basis for the valuation of the technology and reaching agreement on issues related to payments and intellectual property protection – both short-term and strategic benefits have to be examined.
- Delineation of each party's contribution and responsibilities towards the TT project
- Discussion of issues and methods related to the transfer of codified and un-codified aspects of technology including training
- Creation of effective channels of communication between both parties including visits to each other's facilities
- Consultation with government authorities to ensure concurrence with government policies and identification of possible barriers, likely policy changes and government support available.
- Finalizing the most appropriate mechanism(s) for transferring the technology components sought.
- Preparation of a detailed transfer agreement with emphasis on ensuring intellectual property protection
- Reaching agreement upon payment amounts, procedures, and time frames

Gate 3: Finalizing and Approving Agreement

This gate is operationalized once the negotiations have reached a satisfactory level and the parties express the desire to finalize the agreement through the drawing up of a legal agreement. This gate will critically evaluate the following:

- The comprehensiveness of the detailed transfer agreement
- The adequacy of intellectual property protection arrangements
- The appropriateness of the proposed mechanism(s) for transferring the technology
- The suitability and affordability of the payment amounts, procedures, and time frames

Stage 4: Preparing a Technology Transfer Project Implementation Plan

At the beginning of this stage a transferor of technology would have been chosen and since the creation of a sound organizational infrastructure is critical to the implementation of TT, this stage focuses on making organizational arrangements to receive the technology. The main activities during this stage are the following:

- Identification of changes to be made to the organizational structure and work design based on an understanding of the transfer components
- Identification of changes to be made in the knowledge management system and policy regimes to accommodate the new technology
- Development of pragmatic training and education schedules for the workforce that matches with the components to be transferred
- Formulation of measures to build good relationships between the transfer personnel
- Formulation of a realistic TT project implementation plan that can form the basis of a working relationship between the transferor and transferee
- Milestones are specified to help strengthen project management and control.

Gate 4: Approving the Implementation Plan

At this gate, the following aspects will be carefully scrutinized:

- Whether agreement has been reached with the transferor with respect to the schedule
- Adequacy of the training arrangements
- Adequacy of the modification of the infrastructure
- Intellectual property protection measures
- Durations of critical activities
- Quality assurance procedures
- Payment schedules

If these are satisfactory then a go-ahead signal will be given. Otherwise revisions will be needed. At this gate an initial payment to the transferor, if specified in the agreement, will also be approved.

Stage 5: Implementing Technology Transfer

Technology transfer implementation requires good project management. Changes to product or process technology may sometimes be essential to the successful implementation of a TT project. Very often, firms in developing nations are confronted with finding suitable people at this stage and close cooperation with the transferor may be needed to locate required skills. Scheduling the timely arrival of allied materials, parts, and services is essential to ensure successful implementation of the project. Training programs will also have to be scheduled and conducted either in-house or at transferor approved locations. The major activities at this stage include the following:

- Identification of changes to be made to the product or process to suit local conditions and making the necessary adaptations.
- Recruitment and selection of personnel not already available within the organization and conducting training programs for existing staff.
- Development of improved remuneration plan to facilitate change management.
- Formulation of arrangements with ancillary suppliers of materials, parts and services based on a make vs. buy analysis
- Maintaining links with government authorities to keep track of policy changes
- Commissioning the transferred technology on or before schedule

Gate 5: Implementation Audit

At this gate the scheduled activities and the goals set for the TT project are evaluated. The focus should be on gaining an understanding of barriers to the successful implementation of TT. The audit may focus on the evaluation of project implementation with respect to critical factors such as:

- Commitment displayed
- Conflicts experienced
- Time frames
- Cost incurred
- Quality achieved
- Extent of learning and skill upgrading
- New knowledge generated
- Communication effectiveness

The compilation of a comprehensive audit report outlining the lessons learned and identifying critical success and failure factors is important at this gate so that future TT projects could benefit from these insights.

Stage 6: Technology Transfer Impact Assessment

Assessing the impact of a TT project is difficult because it is a complex process with multiple outcomes that could emerge throughout the life of a project. Also, the intangible benefits of a TT project are difficult to evaluate. However, a well-structured impact assessment could be extremely beneficial and the impacts need to be assessed from customer, market, financial, technological, and organizational perspectives.

The following activities are proposed for this last stage.

- Development of a "Balanced Scorecard (BSC)" approach to assess impacts.
- Identification of the variances (if applicable) between actual and expected outcomes and the formulation of organizational corrective measures.
- Examining the feasibility of improving the transferred technology.
- Identification of new or complementary technologies that could be transferred to consolidate the gains made.

Gate 6: Developing Guidelines for Post-Technology-Transfer Activities

At this gate important decisions have to be taken as to whether to continue to use the technology by improving it incrementally or go for another TT project. Successful TT projects can lead to strong and long partnerships between the transferor and the transferee and new projects could be initiated in a variety of ways.

At this gate guidelines may be formulated, based on the experience gained at all the previous stages and gates for post-technology-transfer activities such as:

- A new technology transfer project
- Internal development
- A mix of both in partnership with the transferor.

These decisions can then be fed into the corporate planning process of the organization.

Summary Remarks on the TTLC Approach.

The TTLC approach is not purely conceptual. Its practical relevance, usefulness, and validity have been established through several case studies carried out by Jagoda (2007) in Australia and Sri Lanka. The main advantages of the TTLC approach are the following:

- The TTLC approach ensures that a TT project is considered holistically and incorporates much of the wisdom shared by various researchers and practitioners through their technology transfer models.
- The TTLC approach is structured to enable SMEs avoid many of the problems that they normally face when planning and implementing a TT project.
- It is a good way to incorporate cross-functional cooperation in planning and managing TT projects and also ensures that important activities are not forgotten or carried out carelessly.
- A single empowered team is responsible from start to finish. This avoids turf wars.
- All projects may not have to go through all the stages. Low risk projects may go quickly to the latter stages.
- The approach must not be seen as a bureaucratic system. It actually facilitates the development of a streamlined system with clear agreed upon, and visible, road map.

Clearly the success of the approach will depend upon the skills possessed by the managers involved in the TT project to carry out the activities effectively at the stages and gates. Thus, organizations that are serious in competing in today's global business setting must develop such skills on a priority basis.

Opportunities for Combination of HRM & ITES Personnel

Modern organizational setting is characterized by constant changing relation to environmental factors and human resources. As regard to the environmental factors, we find changes in the operating organizational structure, the network of the working procedures, customs on norms and the economic, political and the social patterns in which organizations exist. Moreover, there is a constant change in human resources; the individuals are employed daily with new creativity, ideas and experiences, while the existing workforce is also continuously changing their ideas, attitudes and even values. These two dimensions reveal the following trends.

- Increased complexity of the organizations, employment and a clear hierarchy of owners, managers and workers.

- Increased the number of employers, self-employed and enlarged size of workforce.
- Enhance the need of training in view of increased requirements of specialized skills.
- Public interventions and legal complications in employee and employer relationships.
- Enhanced training and development of managers and professionalization of management education.
- Possibility of employment explosion in view of ever increasing size of workforce.
- Rising the formal level of education of rank and file employees who becoming increasingly critical of management malpractice and errors.
- Rank and file employees rapidly growing demands in different employment situations.
- Recognizing of close relationships between profits and earnings and ability to manage human resources.

Indeed these trends manifest themselves in problem areas as identified by the managers in organizational settings. Although the change may provide solutions to some problems, it may create several new ones. There is an urgent need to understand these problems, anticipate them and to find solution to them. The responsibility to find out the solutions to these problems lies with every manager who has prepared to deal with different change effectively through educational and developmental programs. Obviously, every manager is responsible for management of human resources of course with the advice and help of personnel department. Management of human resources is the essence of being manager who has to get things done through the people without whom he can be a technician but not a manager. Thus, every manager has to develop and maintain his competency in managing human resources, which have assumed utmost significance in modern organizations. The belief that the people working for a firm are one of its main assets and one of the decisive factors in determining its results is one that leaves little room for argument.

There is no question regarding the fact that workers' qualities, attitudes and behavior in the workplace go a long way to accounting for a company's success or lack of it. While this type of resource is one over which companies do not have complete control, there do exist certain instruments to enable them to exert their influence on the quality and performance of the human capital on which they rely. The Human Resource Information Systems (HRIS) practices that they adopt will have a vital influence in this area and thereby on the results obtained by the firm. Driven by significant internal and external forces, HRIS has evolved from largely a maintenance function, to what many scholars and practitioners regard as a source of sustainable competitive advantage for organizations. HRIS has become a key vehicle for developing and improving organizational effectiveness. In the information era, organizations are progressively incorporating ICT into their processes, using different

tools and solutions. These tools are applied in a wide variety of ways (i.e., manufacturing resource planning, office automation, computer-supported cooperative work, distributed teams, supply-chain, enterprise-wide resource planning, or virtual integration). ICT is transforming organizations and the way that people work, interact and, feel in knowledge-based organizations. To cope with these new human resources challenges, it is necessary to review and to transform organizational HRM practices. Those in the world of human resources management are often accused of living in an ivory tower, managing the human side of their organizations in ways that lack relevance in the new information era. The impetus for the HRM change comes from recognition of recent developments in the HRM profession and a realization that the current practices do not reflect those changes, especially those changes related with ITC strategies.

In the information society, HR/HRIS managers need to rethink how to deploy and mobilize the more valuable corporate resource: the human capital. HR management professionals are becoming strategic business partners in their organizations, capable of contributing to the improvement of the organization's competitive advantage. Whether human resources contribute to competitive advantage in the new business world depends critically on the chosen strategies. Given this strategic focus, practices needed to be revised in order to help HR professionals in their new role. Recognizing the need for substantive revision and greater emphasis on relevant human resources management, any HR manager should begin the process of policies change and adjustment. Towards that end, this Encyclopedia will focus on describing a collaborative effort between human resource management practitioners, HR faculty, and HR researchers. The effort will be focused on the revision of the human resource management practices in the knowledge era. In this process, a brief review of both personal and managerial competencies and abilities is also needed.

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HRIS has become a key vehicle for developing and improving organizational effectiveness.

Information as Resources

Information, defined as knowledge in communicable form, is recognized today as one of the main requirements for development. Indeed the ability to record and use data, information and knowledge is one of the most important human characteristics."—UNESCO/PGI."Information is data that has been processed into a form that is meaningful to the recipient and is of perceived value in current or prospective decisions". This also provides a working definition which has been used in many organizations. "Information is some meaningful message transmitted from source to users. In this process information may be stored in information products and systems organized for providing a memory in numerical, sound and image forms. Information may also be communicated through interpersonal channels. The "source" may be documentary material, institutions or people."

Information is not homogenous and can be categorized into various types, leading to further problems of definition. The types may be distinguished by: Role, e.g., information for decision-makers.

- Coverage, e.g., in specialized subjects
- Level, e.g., technical, popular
- Channel, e.g., computerized services, mass media.
- Accessibility, e.g., public and classified.

It is also to be noted that information forms a part of a hierarchical relationship of Data; Information; Knowledge; Wisdom. As with any hierarchy the base is considerably more extensive than the apex, and we can suspect that quantity of wisdom that eventually develops from the basic data will be limited.

The Evolution of the HRIS

For the past 30 years, organizations of all sizes have been using technology to help them with human resource processes. These processes have ranged from maintaining databases by location to store employee information, to keeping a global, enterprise-wide data repository of employees, their skills and competencies, and their development plans.

Most HR management system deployments today are, for the most part, transactional engines that focus on functionality, including:

- Core HR data, including name, address, department number and manager.
- Core benefits data.

- Payroll information.
- Transactional reporting on HR, benefits and payroll.

With the rise of the Internet and corporate intranets, organizations continue to look for opportunities to reduce HR transactional costs by deploying employee and manager self-service (or direct access) solutions to both increase availability of information to the workforce and decrease the focus on transactions. The typical types of transactions include:

- Creating a job requisition.
- Viewing an employee's paycheck.
- Changing an employee's address.
- Viewing and enrolling in benefits.
- Changing an employee's salary.

While these functions are important, most of the time HR information technology professionals have difficulty proving the value of these solutions to executives. One of the most manual (or semi-automated) processes that still exists in organizations today is the performance review. Employees complete their reviews in a Word document and e-mail them to their manager. The manager might edit the reviews and send them on to HR. HR then enters the reviews into the HR system, and there they are kept. This process is in desperate need of an overhaul in most companies, and the right time to do it is now. The historical development of information presents several phases. The earliest or oral phase is of considerable importance and traditionally most information would have been captured thus.

This is still the case—witness meetings and gatherings such as this. The method however has its drawbacks in that the amount of information that can be stored by an individual or even collective memory is limited in quantity and by the lifespan of individuals. The second major phase emerges with the evolution of systems of writing and the associated tools and materials with which and on which to write. In the first few years of life and school a child can now reproduce the steps that took thousands of years of this evolutionary process. Defining a "knowledge occupation" as "one that involves activities, gainful or costly, that are designed chiefly to aid in the generation, transmission or reception of knowledge of any type, sort or quality, including giving, directly or through instruments, visual, aural, or otherwise sensible signals, and ranging from carrying messages to creating new knowledge. Information forms the major base on which the growth of knowledge and so much else depends. Without information decisions will be random ad hoc choices, projects are unlikely to meet set objectives; reports will not adequately reflect situations. Imagine

this situation occurring daily and then multiply it by the numbers of the population because information is used at all levels and everyone has information needs. In general we can suspect that these will not be met. There is need therefore for information to be used as one Papua New Guinea's natural resources capable of being exploited for personal advancement of all citizens and the good of society. In an atmosphere of almost constant change, however, new services, and new approaches and centers will need to be created if information is to contribute to national development.

Definition

Human Resource Information Systems (HRIS) have become a major MIS sub-function within the personnel areas of many large corporations. The development of HRIS as an entity independent of centralized MIS, assesses its current operation and technological base, and considers its future role in the firm, especially its relationship to the centralized MIS function. The HRIS is a software or online solution for the data entry, data tracking, and data information needs of the Human Resources, payroll, management, and accounting functions within a business. Normally packaged as a data base, hundreds of companies sell some form of HRIS and every HRIS has different capabilities. Pick your HRIS carefully based on the capabilities you need in your company.

The Objectives of HRIS

Typically, the better the Human Resource Information Systems (HRIS) provide overall:

The HRIS that most effectively serves companies tracks:

(a) Attendance and PTO use,
(b) Pay raises and history,
(c) Pay grades and positions held,
(d) Performance development plans,
(e) Training received,
(f) Disciplinary action received,
(g) Personal employee information, and occasionally,
(h) Management and key employee succession plans,
(i) High potential employee identification, and
(j) Applicant tracking, interviewing, and selection.

The Functions of HRIS

An effective HRIS provides information on just about anything the company needs to track and analyze about employees, former employees, and applicants. Your company will need to select a Human Resources Information System and customize it to meet your needs. With an appropriate HRIS, Human Resources staff enables employees to do their own benefits updates and address changes, thus freeing HR staff for more strategic functions. Additionally, data necessary for employee management, knowledge development, career growth and development, and equal treatment is facilitated. Finally, managers can access the information they need to legally, ethically, and effectively support the success of their reporting employees. An emerging human resources job is the human resources information system specialist, who develops and applies computer programs to process personnel information, match job seekers with

Job openings, and handle other personnel matters. Jobs of the human resources information system specialist can include developing Intranets, cooperating on the recruiting aspects of the company's website, developing organization weblogs (or blogs), developing online data bases of employee information, developing online searchable data bases of applicant resumes, training staff, training record maintenance, and any other aspect of human resources requiring information storage or computer software, hardware, and desktop support.

The world of performance management processes and performance reviews has changed drastically over the years, in both policy and principle. Best-of-breed companies are using the performance management process not only to manage compensation, but also to manage the performance of the workforce and drive it to new strategic levels. In most companies, the performance management process can be integrated into the existing HRIS footprint through:

Recruiting

This is one of the last places most organizations consider important for integration with performance, but it really is one of the most important. As talent becomes harder to find, recruiters look within their own house for the next applicant for that all-important job. Recruiters want the ability to understand internal applicants in greater detail than the external candidates, including a performance history and learning details to assess their fit for open positions. The integration of performance into the HRIS, where recruiting data often is housed, would open a new door for continued focus on internal mobility.

- **Core HR Information**

To manage the performance management process in the most effective and efficient manner possible, organizations must leverage the data that exists within their HR systems. This includes basic data, such as name, department and supervisor, but organizations do not often take advantage of other data that could be instrumental to the process.

This data includes other employees in the department to support the 360-degree review process, the employees' matrix reporting structure that many organizations adopt today and the comparative data available based on the job code of the employees. The ability to compare and contrast performance of employees with like jobs gives managers and executives visibility and decision making tools that they have never had in the past.

- **Career and Succession Plans**

Most existing HR solutions provide tools and technologies to store career and succession plans for the workforce. Integrating these plans with performance management processes is crucial to support employee growth and job satisfaction. Executives have requested this data for years, as retention is a top metric within most companies. Today, this data is not a request, but a requirement, and the need to automate a very manual process is crucial for success and keeping a competitive edge

- **Competency Management**

Understanding the skills and abilities of the workforce continues to baffle most executives. Many organizations know more about their IT investments and expenses than about their people. On average, companies spend 8 per cent of their total expense line on IT and 70 per cent on labor. The fact that a company would know more about how much memory is in a computer, who sends e-mail to whom and what Web sites get visited most frequently than what their "most important asset" knows illustrates the need for a renewed critical focus on assessing the true value of the workforce.

- **Compensation**

For years, the purpose of the performance review has been to allocate annual salary increases. While this process has generally been handled manually, it also has seen a great deal of controversy and change. Compensation is truly the biggest driver of certain types of behavior and works differently for various job groups. Incentive compensation is a great

tool to drive sales and specific performance targets, whereas base compensation is a great tool for driving overall employee satisfaction and improving performance. What has been missing in all links from compensation to performance is measurement of year-over-year increases in performance and the impact that compensation has on performance.

Organizations that take an interactive view of the performance management process and ensure that compensation is just one of many outcomes, which might also include promotion, new opportunities for learning and development, and other forms of recognition, understand the importance of integrating performance and HRIS to measure total compensation and rewards. Organizations that still rely on a manual, semi-automated process as a once-a-year, meet-the-requirement tool will soon realize that the war for talent and staffing shortages will make it necessary to approach pay-for performance as an integrated process.

- **Reporting and Metrics**

Another missing link for the performance management process that HRIS technology can assist with is in the area of reporting and metrics. The two reports that managers traditionally focus on in this area are transactional: How many have been turned in, and how do we look compared to a typical performance bell curve? This information may be great to have, but does it drive business results?

Executives want answers to strategic questions, such as: What revenue increases have resulted from a performance management process and allocation of compensation increases? How has customer satisfaction increased because of an increased investment in agents? And how has employee turnover decreased because of a renewed focus on people?

The sooner that those involved in the performance management process stop looking in the mirror at their performance throughout the process and put in place measures that explain how the process has impacted business results, the more value and attention performance management will receive from executives.

Future of HRIS

There will be access to that information through the HRIS. Other process changes will have the most effect on the human resource representatives in each department. The largest of those changes is probably electronic forms processing. Representatives will be able to submit forms on the web and access human resource and payroll data.

Of course, those most seriously affected by this switch are the human resource employees in central administration who will use the new system daily. It's a major change in daily tasks for all of our staff. Major changes like this can be upsetting for dedicated employees who have devoted years to development and maintenance of one complex system only to have it replaced by a totally new one, complex in different ways.

People will be learning how to process forms with the web-based system, and they will be learning how to get data that meet their needs out of the system. This will require new skills and in some cases will require people to adapt to new ways of doing things. The people we have working on this new system are extremely good, and have faith in HRIS. Productivity and efficiency can be expected to decline somewhat while we learn the new system.

After we become comfortable with these new tools, the embedded software systems will allow us to achieve higher levels of productivity and efficiency than before. I think the best way to deal with change is to get comfortable with what is different.

And hope the staffs will take full advantage of the new system. And they will practice with the new system as soon as it is available to achieve higher levels of productivity and efficiency than before.

HR was previously a stand-alone function, and has now become more integrated into the rest of the organizational functions. The HR function needs to move away from performing transactions and towards forming strategic business partnerships in the organization.

It needs to measure and demonstrate the value and contribution of HR to the business strategy and integrate the technological aspect too.

- Thoroughly understand the overall corporate strategy.
- Integrating different functional area through IT for achieving optimization among them.
- Examine HR strategy to ensure that it is clearly aligned to your business strategy.
- Ensure executive buy-in for HR strategy by engaging in discussions with key decision makers in your organization.
- Bring the connectivity & speed for the HR function to the business strategy by using HRIS.

Human Resource and Skill Requirements in the IT and ITES Sector are listed in the table

Human Resource and Skill Requirements in the IT and ITES Sector

Level	Skills Required	Skill Gaps
Executives (Voice based)	Functional skills: ▪ Ability to handle enquiries ▪ Computer/key board skills ▪ Attention to details ▪ Basic process knowledge and ability to provided technical support ▪ Ability to meet turn around time requirements Soft skills: ▪ Adequate communication skills ▪ Active listening skills ▪ Ability to understand accents ▪ Ability to empathise with customers ▪ Aptitude to undertake repetitive work	Functional skills: ▪ Inadequate process compliance ▪ Lack of attention to details ▪ Lack of understanding of basic quality initiatives ▪ Lack of understanding of information security and privacy issues Soft skills: ▪ Inadequate communication skills ▪ Lack of aptitude for multi-skilling
Executives (non-voice)	Functional skills: ▪ Strong analytical skills ▪ Ability to comply with process ▪ Ensuring faster turnaround time ▪ Ability to use tools ▪ Basic business/process understanding Soft skills: ▪ Good communication (spoken, written) skills ▪ High level of perseverance ▪ High energy level	Functional skills: ▪ Lack of problem solving skills ▪ Lack of process adherence ▪ Lack of business/process understanding Soft skills: ▪ Inadequate communication skills ▪ Lack of customer orientation

Level	Skills Required	Skill Gaps
	▪ Emotional intelligence ▪ Aptitude for repetitive work ▪ Integrity	▪ Lack of aptitude for the job
Team Lead	Functional skills: ▪ Understanding of process and the nuances of the Statement of Work (SoW), especially on issues related to quality ▪ Ability to plan, control and monitor activities ▪ Understanding of best practices with regard to quality management and Information Security Soft skills: ▪ Team management skills ▪ Motivating the team ▪ Understanding and managing customers expectations	Functional skills: ▪ Inadequate business and process knowledge ▪ Inadequate sensitivity to compliance and information security issues Soft skills: ▪ Lack of customer orientation ▪ Lack of empathy
Process Manager	Functional skills: ▪ High level understanding of key outsourced business processes ▪ Ability to plan, control and monitor activities ▪ Understanding of best practices with regard to quality management and Information security ▪ Understanding of client requirements	▪ Inadequate domain knowledge ▪ Understanding of business perspective

Level	Skills Required	Skill Gaps
	▪ Migration of outsourced processes ▪ Time, cost and quality consciousness Soft skills: ▪ Team management skills ▪ Motivating the team ▪ Understanding and managing customers expectations	

Source: Industry inputs and IMaCS analysis

Level	Skills Required	Skill Gaps
Executives	▪ Adequate domain and technical knowledge of field of graduation/specialization ▪ Adequate communication skills – especially report writing skills ▪ Aptitude for knowledge intensive work ▪ Adequate process knowledge ▪ Adherence to timelines	▪ Inadequate domain knowledge – be it from engineering stream, legal (ability to read patents and IP related), medical (ability to understand drug usage from patent narration) ▪ Poor aptitude ▪ Inability to do repetitive work ▪ Lack of adequate writing skills.
Domain Specialists and Team Leads	▪ Adequate domain knowledge ▪ Ability to manage teams ▪ Adequate review ▪ Soft skills ▪ Ability to plan, schedule, allocate work, compliance with quality and security processes	▪ Inadequate project management skills. (This is especially compounded by the fact that there are not adequate project management training programmes targeted at KPO/BPO industry).

Major Trends Impacting Skill Requirements in the ITES Industry

- The industry is likely to see an increasing share of penetration from KPOs. While the BPO sector would contribute large volumes, the KPO sector would be a 'value play'. Companies would seek to increasingly move up the value chain with KPO offerings.
- A lot more areas are likely to witness KPO activity spanning patent advisory (in addition to patent filing/documentation), high-end research and analytics, online market research, and legal advisory.
- A larger portion of the revenues are likely to come from end-to-end service offerings in the domestic market as well as overseas market.
- A larger portion of processes viewed as 'core' and 'more risky' would be outsourced to India based ITES vendors as overall confidence in this sector increases in the eyes of clients.

HRIS & Employee Legislation - An Integrated View of HRIS

With a powerful feature rich database that captures all employee data, workflow process and tools different software's modules also offer effective solutions to manage Governance, Risk and Compliance (GRC) with internal HRIS and ERP solutions.

The solutions provide the foundation for a best-in-class enterprise governance, risk and compliance program for your employment practices to comply, manage and provide oversight of regulatory requirements. They include the ability to set HR Policy, manage risk, enforce compliance processes, and audit management.

HRIS Compliance Management Systems (HRCMS) allows companies to comply with laws and regulations and manage risk related to compliance with:

Workforce Eligibility Verifications under Verify Program

Export Laws under different regulation, e.g., Labor and Immigration Controls imposed by United States & EU etc. Data privacy laws on employee for US, EU and other Countries Manage employee benefits for Healthcare and compensation regulations manage employee data needed for security clearance for Defense & Aerospace and regulator Contractors

Employment Eligibility Compliance with E-Verify

ERP platform offers companies comprehensive E-Verify solution that captures all required data, status and case numbers and final confirmations in an easy to use interface integrated with forms and employee on boarding solutions to manage compliance with government labor regulations.

More Export Laws Compliance

HRIS Compliance solution allows companies to manage employees for all requirements related to Export laws under International Traffic in Arms Regulations & Export Administration. Capture all required data for compliance with license requirements for foreign or dual nationals that are employed in the concern country. It offer comprehensive processes, workflow tools and employee data retention that support license requirements for deemed exports or for exporting sales and marketing data controlled under Categories to key employees overseas.

Labor and Immigration Controls

HRIS Compliance solution allows companies to manage employees for all requirements related to work authorizations including labor certifications, Perm Applications, visa, citienship eligibility and related information, passport information for employee and employee family dependents, provide supporting documentation for employee records, collect paystubs, education qualifications, retain position ads and documentation, manage document retention requirements to keep in compliance with law requirements.

The system tracks applications and allows co-ordination with a company approved attorneys, filing with agencies, tracks employee status with on demand reports on all employees and provides information to 3rd party vendors providing immigration related solutions also.

Self Assessment Questions

1. What are your perceptions of an HRIS? In your own words, describe why an organization might want to implement an HRIS.
2. What is the difference between a stand-alone and an enterprise resource planning (ERP) system?
3. What is the hardest for the HR professional to control: time, cost or scope?
4. List why your organization would want to use or does use an HRIS (if you have limited work experience, interview HR business professionals to help you).

CASE STUDY

Growth of Communication Technology – A Case Study of India

In any Developing country, the factors mentioned in the previous section can play a major role in either progressing or depressing the growth of modern ICTs. In this regard the case of India is very illustrative. We shall examine the Indian case with the help of the case studies related to the use of two major ICTs namely Radio and Television.

The Relative successes and failures of various types of TV and Radio in the Indian Context:

1. Radio

Radio broadcasts in India for educational purposes has taken the form of School broadcasts, adult education and community development projects, Farm and home broadcasts, university broadcasts and language learning projects. Among school broadcasts, the programs aired by the Central Institute of Educational Technology for primary classes were one of the best programs of the genre. Among the adult education and community development projects the "Radio-forums" that were tried out in 144 villages around Poona with the help of UNESCO. The program was tried out in groups of 20 members each.

These forums were expected to listen to thirty-minute radio programs on agriculture and community development. Farm and Home Broadcasts were initiated in a big way in 1966. The topics covered in these were related to agriculture and allied topics. The aim was to educate the farmers and to provide them information in innovative practices in their field. These programs were very effective. University Broadcasts in India have traditionally been of two types- 'general' and 'enrichment' oriented. The former includes topics of public interest while the latter is used to support correspondence education of various institutes. The University of Delhi works out details in association with AIR Delhi for providing education through radio.

Again many Open universities in the country also use radio broadcasts. Even the CIEFL, Hyderabad is engaged in offers modules through radio mode. Language learning Projects are also a popular form of using the medium of radio. The most prominent example of the same is called the "Radio-pilot project" aimed at covering 500 primary schools of Jaipur and Ajmer in order to teach Hindi language. These projects were successful in improving the vocabulary of students by a very large measure. Later on such an experiment was also repeated in Hoshangabad district of Madhya Pradesh (IGNOU, ES-318, Communication

Technology for Distance Education, 2000, pp.42-44). GyanVani project was launched by IGNOU is offered in FM channels in 40 cities around the country for the purpose of educational development. EMPC is the nodal agency for implementing the project. The EMPC is currently studying the possibilities of creating a global Galvani. Interactive Radio Counselling is a recent conception in Indian Distance Education scheme. In this scheme various experts at AIR stations provide live Counselling across the country.

They are conducted at 189 radio stations on Sundays for an hour. Reflecting on the Interactive Radio Counselling mechanism as adopted in IGNOU, S.S.Chaudhary. et.al reported that IRC was an effective input to accomplish course objectives (Bansal,kiron and Chaudhary,sonvir.S,1999, "Interactive radio for supporting distance education: an evaluative study", Indian Journal of open learning).Again, B.Sukumar states that IRCs provide a major forum on which the students, especially from the remote areas can interact with the teaching end and can get their doubts clarified. The study revealed that even though IRC is well accepted by the students, there needs to be more attention given to its various aspects to make it really effective.(Sukumar,B.(2001),IGNOU interactive Radio Counseling :a study,IJOL,10(1),pp.80-92) Radio as an Information and communication technology is by far the most successful of all ICTs in India.

2. Television

Experiment with television as a medium began very early in India. The major programs of significance in this regard were Secondary school TV program, Delhi Agricultural Television Project: Krishi Darshan, Satellite Instructional TV Experiment (SITE), Indian National Satellite Project (INSAT) UGC's Higher Educational Television Project (HETV) and Gyan Darshan (TDCC).

A. Secondary School TV Program

This program was started in Delhi on an experimental basis in October 1961 to impart lectures in Physics, chemistry; English and Hindi for class 11.These were basically syllabus-based programs. The aim of the program was also to enable students without laboratory facilities to have a feel of the same in a detached environment (for science programs).

B. Delhi Agricultural Television Project

This project was initiated on January 26, 1966 for providing information related to agriculture to farmers. It was provided in 80 villages in and around Delhi. The program attained a fair degree of success.

C. Satellite Instructional TV Experiment (SITE)

This experiment was started in the year 1975, initially for a period of one year. The telecast concentrated on the broadcast of two types of programs- 1. Development related programs featuring health, agriculture etc and 2. School programs in Hindi, Kannada, Telugu and Oriya.

D. Indian National Satellite Project (INSAT)

The INSAT series of satellites were a landmark in the history of Indian Educational technology. Educational Television broadcasts were inaugurated through the INSAT series of satellites on 15th August 1982 in Orissa and Andhra Pradesh. Later on it was extended to AP, Bihar, Gujarat, Maharashtra, and Orissa and UP. The cover of the INSAT spans the whole of the country in today's date. One of the avowed objectives of the INSAT scheme was to bring the rural population into the national mainstream. The areas covered include most of the areas of interest to these populations.

E. UGC's Higher Educational Television Project (HETV)

The UGC's Countrywide classroom program was inaugurated in 1984.The production of programs under this scheme is undertaken by the Electronic Media Research Centers (EMRC) located at various spots in the country. Some of the programs are also imported from other countries too. The aim of UGC through its CWC was to upgrade the quality of education in the country.

F. The Gyan Darshan Experiment

A collaborative effort between the MHRD and IGNOU, the Gyan Darshan channel has come to stay as a major innovation in educational television. The EMPC is the coordinating and transmitting agency for the programs. Regular transmission of programs from EMPC started on January10, 2000. Cable operators are being encouraged to make available the programs of Gyan Darshan to all their customers. This was for ensuring a countrywide reach. Currently Gyan Darshan is available for viewing both in India and abroad.

A Relative Analysis: Case Study

A relative analysis of the performances of Radio and Television would indicate the factors that can lead to the success and failures of various media in Developing countries. It has been noticed that the experiments conducted with the medium of radio have been

far more successful than those conducted with the medium of Television. The reasons are not far to seek. The extent of penetration of Radio is far greater than that of TV. Even today the penetration of TV is as low as 80 per 1000 compared to the widespread. On the other hand radios are easily accessible and with the transistor revolution radio as a technology have become very cheap. Another factor working in favors of Radio, as a medium is the low capital investment and operating costs of radio broadcast technologies. Again learners can easily listen to radio programs even while they are doing manual work. Radio is in all its real sense an egalitarian medium of communication.

The ease with which it is accessible to the poor and rich alike makes it the most ideal medium for information dissemination. Compared to the radio the TV has certain disadvantages that work against it as a medium of communication. The major problem with regard to making the TV a successful medium of communication is the high cost of program production. Sonvir Choudhary states in that there are groups recommending the use of TV due to its glamour value and those opposing it due to the doubts over its viability of its access (Choudhary, s.v, 1992, "Television in distance education: the Indian scenario", Indian Journal of Open Learning, 1(1), pp.23-31). Thus there are major factors that have led to the relative success of a medium like radio over a medium like TV.

What hinders the wider application of ICTs in the Third World?

Political factors of various hues affect the application of ICT in various ways. The political will of the ruling elite can at times pave the way for the growth of a particular type of communication technology in a country. The current phase of buoyancy related to computer technology and information technology can be attributed to the energetic steps taken by the late Prime Minister Mr. Rajiv Gandhi and his scientific advisor, Mr. Sam Pitroda. They were also instrumental in initiating a series of Technology missions. Further, if there is decentralization of communication technologies, it will lead to making the country a well-informed one. Such a scenario can help the people to make well-informed choices about the political scenario. This may even result in a topsy-turvy period of transition.

Human and Administrative Factors can play a major role in the growth of ICTs in the third world. It is seen that if all sections of people do not have access to the technology being implemented then it will result in the creation of two classes of people – 'haves' and 'have-nots'. This may result in a sense of deprivation among the 'have-nots'. It may also result in many administrative problems. Implementation is a major issue. When new technologies like computers are implemented, resistance from ground level staff is a real possibility. Far more important than technological resistance is the attitude of the people towards the use of technology for educational purposes. Sonvir Choudhary and Shyam Behari in their

Modasa experiment state that developing countries do not lag behind advanced countries in the use of technology for entertainment. With a little change in perception the same technologies can be used for education too. The authors proved this fact through their experiment at Modasa, a village in Gujarat. (Choudhary,S,V and Behari Shyam,(1994) Modasa Experiment: Distance teaching through cable TV network system,Indian Journal of Open Learning 3(1),pp.24-28)

Economic factors also affect the application of new ICT in Distance Education. Developing countries have a constant paucity of funds especially for the application of new ICT in Distance education. Due to this people are unable to reap the benefits of modern technology. For example, one of the reasons for the lack of success of UGC's CWC was the lack of adequate TV sets for reception of the program.

Equipment Related factors are a major hurdle in the growth and application of communication technologies. The main aspect in this pertains is to the import of various equipment. In many cases, maintenance of the same requires foreign technicians. In the case of dual use technologies, there may emerge many import restrictions. A major case in view is the import restrictions imposed on the export of cryogenics related rocket technology to India by USA in recent times.

The Human Element is also major importance in the growth and application of new ICT. In many cases, it is seen that the teachers act as a major roadblock against the implementation of new technology. They are not ready to accept any change in their role. With the advent of new ICT teachers are no longer the storehouse of all knowledge, but are more of managers of education.

Communication policies of various countries also play a major role in deciding the application of various communication technologies. These policies are a product of social pressure. Policy formulations are based on the kind of role the political elite want that media to play in the process of development of the country. In the Educational field policies should be formulated in such a way that the inter –regional disparities as well as the inter-strata disparities are overcome and equal access is made available to all the segments in their quest for education.

Suggestions and Recommendations

The following suggestions and recommendations may be given for facilitating greater growth and adaptation of ICTs in Developing countries.

In keeping with the pattern of the globalized economy, greater impetus should be given for the cooperation between the government and the private sector to adapt and disseminate new technology in the field of education. Tax rebates should be extended to private institutions engaged in the field of research on ICT adaptability in Distance Education The government of these countries should invest at least a percentage of their GDP in research and adoption of new ICT. The Developed countries should accept it as their moral duty to transfer those ICT technologies to developing countries that can bring about vast changes in the educational profile of these countries. While choosing between different ICTs, the criterion of positive end use effect should prevail above the aspects of Novelty and fashion. The governments of these countries should concentrate on building up the base of high speed data transfer by initiating projects like the Sankhya vahini.Venture capitalist projects should be encouraged to make break thorough in the field of ICTs for educational purposes. I t is as important to empower people with technologies as to make technologies accessible to them. Access without empowerment will stunt the growth of technologies.

Summing Up

The growth and application of new ICTs in the field of education in Developing countries is fraught with immense difficulties. However, the choice of the medium is of paramount importance in ensuring that the objectives of using a particular media are fulfilled. From the relative analysis of radio and TV as media in India, we can safely conclude that the major factors that decide the growth and application of an ICT in Distance education are the access to the media, its cost effectiveness, its user friendliness and its pedagogic value. Unless all these factors are taken proper care of, growth and application of ICTs in Education will continue to be as daunting a task as it ever was.

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