CHAPTER: 2

THEORETICAL

2.1 Understanding Information

Information (shortened as info or info.) is that which informs, i.e. an answer to a question, as well as that from which knowledge and data can be derived (as data represents values attributed to parameters, and knowledge signifies understanding of real things or abstract concepts). As it regards data, the information's existence is not necessarily coupled to an observer (it exists beyond an event horizon, for example), while in the case of knowledge, information requires a cognitive observer.

At its most fundamental, information is any propagation of cause and effect within a system. Information is conveyed either as the content of a message or through direct or indirect observation of something. That which is perceived can be construed as a message in its own right, and in that sense, information is always conveyed as the content of a message.

Information can be encoded into various forms for transmission and interpretation (for example, information may be encoded into signs, and transmitted via signals). It can also be encrypted for safe storage and communication.

The Free Dictionary by Farlex states the following about information:

- Knowledge or facts learned, especially about a certain subject or event.
- The act of informing or the condition of being informed; communication of knowledge.
- Computers Processed, stored, or transmitted data.
- A numerical measure of the uncertainty of an experimental outcome.

From that sense it can be concluded that the information is the result of processing one or more data that gives meaning and benefits. Information obtained from the

processing of the data can be assessed by its nature. The nature of the information that determines the value of information is as follows:

a. Ease in obtaining
b. The broad nature and completeness
c. Accuracy (accuracy)
d. Compatibility with the user (relevance)
e. Timeliness
f. Clarity (clarity)
g. Flexibility / adaptability
h. It can be proved
i. There is no prejudice, and
j. Can be measured

2.2 The basic concept of information

For information which is derived from a data processing must have different qualities. According Jogianto (2005: 10) quality information consists of three things: accurate, relevant and timely.

a. Accurate

   means that information should be free of errors, not biased or misleading. Accurate also means that information must clearly reflect the intent. Information should be accurate because of the resources to the recipient of the information is likely that many disturbances that could alter or destroy the information. Some things that can affect the accuracy of an information include:

b. Completeness Information

   The resulting information consists of integral comprehensive information and covers various matters related. Because if the information generated in part-most certainly will affect the decisions or actions determine the

overall, so it will affect the ability to control or solve a problem with either.

c. Truth (correctness) Information

   The information generated by the data processing, must be completely in accordance with the calculations that exist in the process.

d. Security Information

   Information should be safe, in the sense only accessible by parties who are interested only in accordance with the nature and purpose of the information.

e. Relevant

   Means that information has benefits for the wearer. The relevance of the information for each person different from one another, then the information can be useful say if it is really useful and in need of the wearer.

f. Just in time

   Some of the information that came at the recipient should not be too late. The information that is outdated will not have value anymore because the information is a cornerstone in the decision.

2.3 Understanding System

According Jogiyanto HM (2001: 2) System is a collection of elements that interact with each other to achieve the intended purpose. A system consists of the parts are interrelated operating together to achieve some goal or purpose, goals and objectives are the same.

According to Raymond McLeod, Jr., George Schell (2001: 9) a system is a network of procedures interconnected, gathered together to perform an activity or to accomplish a certain goal.

Of the two that sense, there are two groups of approaches in defining the system, namely the emphasis on the procedure and emphasizes the component or element.

It can be concluded that the system is a collection of elements or procedures that are interconnected and have a purpose.

2.3.1 Basic forms of System

The general shape of a system consisting of inputs (input), process and output (output). In this system there is a common form of one or more inputs to be in the process and will produce an output.

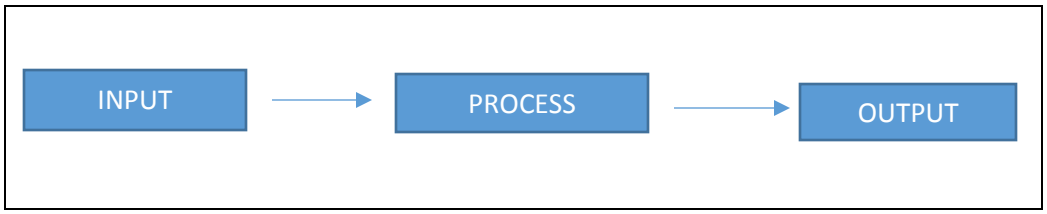


Figure 2.1 Forms Basic System
(Source: Jogiyanto, 2005: 4)

2.3.2 System Characteristics

According Jogiyanto (2005: 3) that a system has the characteristics or properties – specific properties, which have components – components (components), system boundary (the boundary), the system environment (Environment), interface (Interface), the input (Input), output (Output), processing (process), and target (Objective), and the goal (goal).

1. Components of the system a system consists of a number of interacting components, which means working together to form one unit. System components or the elements system can be a subsystem or any part of – part of the system. Each subsystem has the properties – properties of the system to perform a specific function and affects an overall system.
2. Limit System (boundary) Limit is an area that limits the system between a system with other systems or with the outside environment. This system

limits allows a system viewed as a single entity. A limit the scope of the system shows the system.

3. Environment System (environment) Environments outside of any system is beyond the limits of the system that affect system operation. Outside the system environment can be beneficial (to be maintained and the energy of the system) and can be detrimental (to be detained and controlled).
4. Liaison System interface) Liaison is a media liaison between one sub-system with other subsystem. Through this interface allows resources to flow from the subsystem to other subsystems. Output (output) of one subsystem will be input (input) for the other subsystems through a liaison, by connecting one subsystem can interact with the others to form a unity.
5. Input System (input) Input (input) is the energy that is fed into the system. Input can be input treatment (maintenance input) and the input signal (input signal). Maintenance input is the energy input so that the system can operate. The input signal is processed to obtain energy output.
6. Output System (output) the output is a result of the energy processed and classified into useful output and residual disposal. Output can be an input subsystem to another or to the super system.
7. Processing System a system can have a processing section that will transform inputs into outputs.
8. Target System A system must have a destination (goal) or a target (objective). If a system does not have a target, then the operating system would be useless a system is successful when the goals or objectives are achieved.

2.3.3 System Classification

According to Jogiyanto (2005: 6) the system can be classified from several points of view, and are as follows:

1. The system is classified as a system based on an abstract (abstract system) and systems (physical system).

   Abstract system is a system in the form of thoughts or ideas that are not visible, such as the system of theology. Physical system is a system that is physically e.g. computer system.
2. The system is classified as a natural system (natural system) and man-made systems.

   Natural system is a system that occurs through natural processes and not for humans. For example, the earth's rotation system. Man-made system is a system designed by humans that involves human interaction with machines called human-machine system or man-machine system.
3. The system is classified as a specific system (deterministic system) and a system of indeterminate (probabilistic system).

   Certain system operates with behavior that could have been predicted. Interaction between the parts detected with certainty, so that the output of the system can be predicted. For example, on a computer system. Indeterminate system is a system that conditions the future cannot be predicted because it contains elements of probability.
4. The system is classified as a closed system (closed system) and open systems (open system). Closed system is a system that is not related and not affected by the external environment. The system works automatically without any intervening from the outside. Theoretically there is a closed system, but in fact no system is completely closed, there was just are relatively closed system (relatively closed, not completely closed). An open system is a system associated with and influenced by the outside environment or other subsystems. Because the systems are open and unaffected by the external environment, then a system must have a good control system. A good system should be designed in such a way that the relatively closed because the system will automatically closed and open only to good effect.

2.4 Information System

Information is something that is very important for management in decision-making that information obtained from the information system. This information system can be defined as follows:

According Jogiyanto HM (2001: 11) the information system is a system within an organization to bring together the needs of daily transaction processing, support the operation, managerial and strategic activities of an organization and provide certain outside parties with the necessary reports.

When referring to the definition of the system, the information system can be defined as a system created by a human who consists of components – components within the organization to achieve a goal of presenting information. It can be concluded that the information system is the element that is regularly intertwined with the aim of managing the data so as to produce useful information.

The information system also has several components, namely:

1. Hardware (hardware), such as a keyboard, monitors, microprocessor and so forth.
2. Software (software).
3. Brain ware (human).
4. Data.
5. The procedures or methods.

2.5 Components of Information System

According Jogiyanto (2005: 12) the term in the information system components are the building blocks (building blocks) that can be divided into six blocks, namely:

1. Block input (input block)

   An input blocks data into the information system, which can be basic documents that can be processed into certain information.

2. Block models (model block)

   This block consists of a combination of procedures, logic and mathematical models which will process the input data to generate required information.

3. Block output (output block)

   Is information that results in a set of data that will be stored in the form of print data reports?

4. Block technology (technological blocks)

   Block technology is a primary support in the ongoing information system. This has several components, namely a tool to enter data (input device), a tool for storing and accessing data (storage device), a tool to generate and transmit output (output device) and a tool to shape the overall system control (control device). Information technology consists of three (3) main parts, namely technicians (human ware or brain ware), software (software), and hardware (hardware).

5. Block database (database block)

   The database is a collection of data related to each other, are stored in the computer hardware and software used to manipulate it. Data needs to be stored and needs in the organization in such a way, so that the quality of information produced.

6. Blocks of control (control block)

   Some controls need to be designed and implemented to ensure that the things that can damage the system can be prevented if it already occurred mistakes in the use of system damage.

2.6 Application System.

The definition of Application System (The Free Dictionary by Farlex) states the it is a group of related applications programs that are designed to perform a specific function. An application system normally consists of a user interface, business logic and a database of some sort.

The user interface is something that you can see and something that is used to interact with the computer. It could consist of set of screens, web pages or reports. Sometimes the user interface is an input device such as a bar code reader or a voice recognition device.

Some application systems have non-visual interfaces. These application systems exchange data electronically with other applications via a network.

Programming logic consists of one or more computer programs, scripts or other type of computer instructions that are used to validate data, perform calculations or navigate the user through the application system. Most large computer systems use multiple computer languages.

A database is a repository of data that is used to store information of interest to the organization in a structured format. The database could be a set of flat files and/or database tables. The structure of the database is designed to facilitate data access and/or updates.

A computer system is simply a set of computer components that are assembled into an integrated package. The components can be large or small and can be designed for a single purpose or for multiple purposes.

2.6.1 Application System Scope

It is often difficult to determine where one application system ends and the next application system begins. The reason for this is systems are often

integrated to some degree with other application systems. It is not uncommon for different application systems to share some application system components. These common components can include visual objects (e.g. graphic, behaviors) computer programs and/or databases.

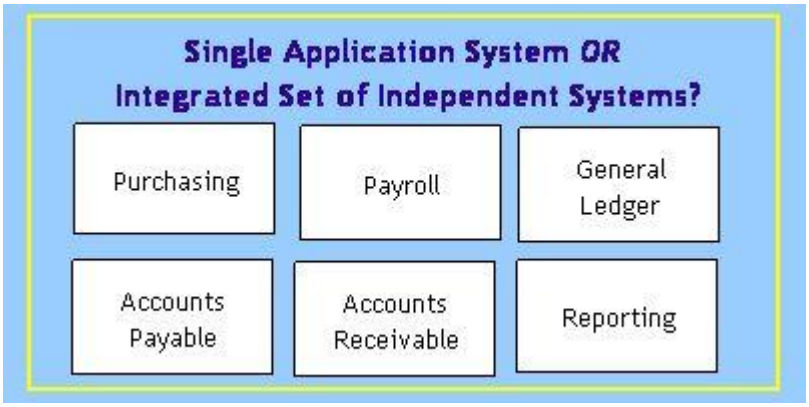


Figure 2.2 Application System Scope

For example, a single financial application might include purchasing, payroll, accounts payable, account receivables and general ledger functionality.

Alternatively, each of these functions could themselves be separate, independent application systems connected via system interfaces or somehow tightly integrated.

2.6.2 Application System Boundaries.

To determine the boundaries of an application system, it is important to examine the application system from both functional and technical perspectives. A single application system will normally have the following characteristics:

1. Consistent user interface design with and application behavior
2. Common architecture (e.g. program language, program design)

3. Shared application system components (e.g. visual objects, programs, database tables)

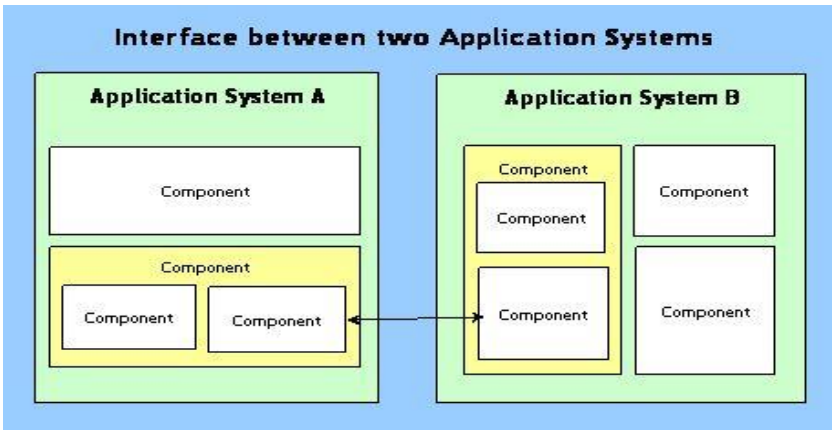


Figure 2.3 Diagram showing two application systems.

2.6.3 Types of Application Systems.

There are many different types of computer systems. Some application systems are small, stand-alone systems that run on a desktop computer that are used by just one individual. Other application systems are very large and complex and can be used by hundreds of people in different geographic locations.

Some application systems are centralized on a mainframe computer. Others are distributed across multiple computers. These "client-server" applications have software components running on client machines (e.g. presentation logic) and other components (e.g. data validation rules, data management functionality) running on one or more server machines.

Some application systems are designed for "self service" by customers. These Internet and IVR applications (Interactive Voice Recognition Systems) guide infrequent or untrained users through transactions step-by-step.

Other applications are designed for employees who provide “personal service” to customers via a call centre or at a kiosk. Users of these systems normally require system training but are then able to process large volumes of transactions expeditiously. These systems normally handle both "standard" and “exception” type transactions.

2.6.4 Systems of Record

A system of record is a type of application system that maintains data and is considered by the business to be the official source of information in the organization. For example, a Human Resources application system would normally be the "system of record" for all employee data. When an employee is hired or fired, the data in the HR system constitutes the official record of employment.

Many other systems in the business, however, also require information about employees. An application system that tracks product sales, for example, might require names and IDs of employees for tracking track product sales. This HR data could be accessed in three different ways:

1. The sales staff data could be maintained redundantly in the Product Sales application
2. The Product Sales application could read the employee data from the HR database
3. The employee data could be copied from the HR database into the Product Sales database

Regardless of the approach adopted, the HR database must remain the system of record for employee data, including data about the sales staff. It is not normally a good idea to maintain the same data in multiple databases. This practice inevitably results in inconsistent data as time passes.

Most operational systems provide a “system of record” role for some corporate data. They also make use of data that is maintained in other systems of record.

2.6.5 Decision Support Systems

A decision support system is a type of application system that is designed specifically to read data and present it to decision makers in a format that is suitable for decision making.

Decision support systems often use information from multiple systems of record. The data from these source systems is cleansed, integrate and made available to system users in report formats, spreadsheet formats and/or via online analytic tools that permit “drill-down” capabilities.

Data warehousing tools and techniques are often used to consolidate data from multiple, disparate data sources. They alleviate data fragmentation, correctness and completeness problems that result from poorly integrated operational systems.

Although decision support application systems support strategic, tactical and operational decision making, they don't provide online functionality for data to be added, changed or deleted. Instead, data is copied from systems of record into the decision support database.

2.6.6 Human Resource Management.

HRM (Human Resource Management) is the science and art of regulating the relations and the role of labor efficiently and effectively in order to achieve the common goal of the company, employees and community.

A. Operational Functions HRM

Operational functions in Human Resource Management are a basic (basic) implementation of HRM processes more efficient and effective in achieving the goals of the organization / company. Operational functions are divided into 5 (five), briefly as follows:

- Procurement Function

  A withdrawal process, selection, placement, orientation, and induction to get employees according to the needs of the company (the right man in the right place).

- Function Development

  Is a process of improving technical skills, theoretical, conceptual, and morale of employees through education and training? Education and training should be given according to the needs of the present work and future.

- Compensation Function

  Is the provision of remuneration directly and indirectly in the form of money or goods to employees as compensation (output) rendered to the company. The principle of fair and adequate compensation is appropriate achievement and responsibility of the employee.

- Function Integration

  An activity to unite the interests of the company and the needs of employees, so as to create a harmonious cooperation and mutual benefit. Where integration is important and difficult in HRM, with uniting two aspirations / interests are contradictory between the employee and the company.

- Maintenance Functions

  An activity to maintain or improve the physical, mental and employee loyalty in order to create long-term relationships. Good maintenance is done by the program K3 (Occupational Health and Safety).

B. The Role of Strategic HRM

Technology changes very quickly, forcing the organization to adapt to the business environment. The change has shifted the functions of human resource management so far only considered as the administration, relating to the recruitment staffing, coordinating conducted by the personnel only. Currently HR change management and stand-alone specialty functions into an integrated function with all other functions in the organization, to jointly achieve the goals that have been defined and has a highly strategic planning function within the organization, in other words the old HR function into a more strategic nature.

Therefore HR management has an obligation to: understand the increasingly complex changes that always occur in the business environment, must anticipate changes in technology, and understand the international dimension began to enter the business as a result of rapidly growing information. Change the paradigm of the Human Resource Management has a different focus in performing their functions within the organization.

There is a tendency to recognize the importance of human resources in the organization and focusing on the contribution of the HR function for the successful achievement of strategic objectives of the company. This can be done by the company to integrate the decision-making strategy with the HR functions, the greater the chance to gain success. The level of integration between strategic planning with HR functions realized in 4 (four) kinds of relationships:

- Relations Administration

  Here top managers and other functional managers consider HR function is relatively unimportant and not as a limitation views human beings as well as assets of the company in making business decisions.
- Relationship One Direction

There is a sequential tie between strategic planning with HR functions. HR functions design programs and systems to support the company's strategic objectives. So HR reacts to strategic initiatives but has no effect, because even though it was considered important but not yet considered as a strategic business partner.

- Relationship Two Directions

  Characterized by reciprocal and interdependent relationship between the strategic planning of human resources. HR functions considered important and trustworthy. HR plays a role in determining the strategic direction of the company and has been used as a strategic partner.

- Integrative Relations

  Marked by a dynamic relationship and inter-active between the functions of HR and strategic planning. Here the HR managers viewed as truthfully strategic business partners and are involved in strategic decisions.

C. Incentives Formation of Effective Integration

The driving factor is as follows:

a. Environment:

   The strength of the environment is very instrumental in carrying increased competition, changes in technology and changes in workforce demographics.

b. History and culture of the organization:

   Culture-oriented organization strong human resources capable of developing a natural relationship between the activities of human resources with strategic planning.

c. Strategic:

   The strategy of concentrating on one type of core business to spur the potential for the creation of a relationship with the strategic planning of

human resources is increasingly integrity because it allows the development and implementation of programs and systems of human resources across the enterprise.

d. Structure:

   The placement of human resources unit in the organizational structure, human resources senior executive was given the same status as other functional directors

e. Skills and values espoused executive:

   Human resources have a good knowledge of the business and is able to provide input into the strategic planning process.

f. The skills and value-owned Employees:

   HR functions received aid management to solve the employment problem will reinforce the importance of the HR function.

g. Management system which includes a system of rewards, communication and information systems and human resources so that human resources will be increasingly integrated strategic planning if the senior executives have a substantial percentage of compensation to bear the risk.

h. Communications systems that have the goal of building awareness of the manager of the company's strategic goals and encourage them develop the motivation subordinates database supported by well-developed human resources.

According to Nkomo (1980) the evolution of human resources management through three stages, namely;

1. Definition Stage: That is when the personnel manager organizes programs of less help to reduce the clutter of employees and the possibility of a split.
2. Manpower Planning: This stage is used needs of workers and the recruitment selection, training manpower to ensure the fulfillment of the target.

3. When the Strategic HR Management HR managers should be more proactive in solving problems in the management of the company and contribute to greater organizational effectiveness.

D. Old Paradigm HRM

Human Resources Management which is usually called personnel management, as long as it has the function of specialization with regard to the activities of administration of employee raises, namely the problems with recruitment, training and wages and so on. The results of good HR management can be ensured that the employees who were recruited have met the criteria required in accordance with the needs of production, other functional parts and receive the appropriate rewards.
Here we see that the old paradigm of human resource management more functional management serve others in the organization, such as the functions of marketing, finance, production or other.

With the changing business environment caused by technological change and the impact of globalization, it is imperative for HR management to change its role to have a more strategic function within the organization. Therefore, the HR department must carry out a new role and cooperate with other line of a manager to make planning in an integrated manner in accordance with the needs of the organization. Planning an integrated manner in accordance with the needs of the organization.
Such changes occur with regard to (Schuler, 1990).

- Changes in the business environment that is very fast and the high level of uncertainty.
- Willingness to adapt quickly to predict the unexpected changes.
- The increase in costs, due to competition for high profits.

- Rapid technological change led to increased demand for employees with better skills through education and training.
- The organization is more complex with regard to products, geography, business function and consumer (market).
- The response to external forces associated with the prevailing laws and regulations, legal proceedings, and other regulations.
- Changes in the organizational structure more flexible, more flat (flatter) and more (leaner) cause the number of employees and the different types of work facing.
- Increased competition and international cooperation.
- There is a diversity of workforce.

  As a result of these changes, HR must be able to adapt quickly to predict the unexpected changes with changes in the old paradigm to a new paradigm for these changes as well, providing a good opportunity for the management of human resources and line managers.

Paradigm	Old paradigm	New Paradigm
Target	Profit	Consumer satisfaction
	Productivity	Quality
	Individual	Team
Design Work	Efficient	Quality
	Productivity	Customization
	Standard	Innovation
Structure	Centralization	decentralization
	Little involvement of line managers	
	Competition	
Communications	One way	Two way
	Top down	Bottom up
	Focus to organizational structure	Focus on HR
Basic Compensation work	Individual	Team or group

Table 2.1 - Showing paradigm shift in the HR Department.
Source: Adapted from Blackburn and Rossen (1993) and Marco (1997)

E. New Paradigm HRM

Business environment changes very fast and complex as demographics, geography, type of business, the environment, and the impact of globalization, requires organizations to adapt quickly to environmental turbulence by being proactive. This means that human resource management must be able to anticipate the developments that are being and will happen, and then perform various actions to address these challenges, which in turn can create a competitive advantage that is not owned by other organizations, given the traditional forms of competition such as lower production costs, improved technology , velocity distribution, the efficiency of the product as well as the development of quality products will be easily imitated by competitors.

With such claims, is a must for HRM to change its role oriented "result". Thus the HRM department must act as mite for other functional management or line manager, meaning that HRM should be actively involved in the planning, management and control of an organization which deals with the allocation and development of human resources. Changes in the role of a responsive system of work being proactive and functional structure to a more flexible structure and implementing strategic policies. It becomes human resources have an important role for the success of the business that is associated with an increase in profit, competitiveness, adaptability also flexibility.

F. HRM Role to Achieve Competitive Advantage

For the purpose of human resources provide a greater contribution to the organization to achieve competitive advantage necessary strategies in an integrated HR planning. The activities of the HR strategy based cooperation between the HR departments in an integrated manner. The activities of the HR strategy are based collaboration between HR departments and line managers

with shoots management engagement in explaining the vision and mission of the organization that can be translated into business objectives that strategy.

The main objective of this strategy greatly improves the performance of current and future ongoing basis so as to maintain a competitive advantage. HRM strategy development process to benefit the organization, namely:

1. Define constraints chance HRM in achieving its business objectives.
2. Clarify new ideas on issues HRM results-oriented and
3. Give a broader perspective
4. To test the activity of management commitment, creating a process of allocating human resources for specific programs and activities
5. Focusing on long-term activities is chosen by considering the first priority for the next 2 or 3 years.
6. Perform a strategy that focuses on the management of the HR function and development staff that blessing.

HR departments can create a competitive advantage with four approaches, namely:

a. Strategic partners a manager partner senior and line managers in implementing the planned strategy, translate business strategy into action with the diagnosis of the organization, namely the system of assessment (the assessment) and the collective organizational practices with business objectives that can be formed at every level of the organization.
b. Administrative Expert, Become an expert in managing the implementation of the work as well as administrative efficiency in order to produce output at a low cost However the quality is guaranteed. These undertakings can be done by re-engineering (reengineering), including re-engineering the human resources field. Being an expert administration need to master two phases of engineering back. First, process improvement, focusing on identifying processes that are ineffective and plan alternative methods to improve quality

of service. Both think of the re-creation (rethinking value creation values) that the process began subscribers. So as to change the focus of work of what can be done into what should be produced.

c. Employee Champion, to mediate between the employees and management to meet the interests of both parties. With businesses increasingly strong competition led to demands for higher employee management. Therefore, a manager should pay attention to the line of employees related to: First, reduce the demand (demand) by reducing the workload and balancing the resources owned by the employees. Secondly, the level of resources to help employees define new resources (in employees) so that they can adapt to the needs of the organization. Third, the changing demands to be a resource to help employees learn how to transform demand into resources.
d. Change agent, becomes an agent of change, refine processes and culture that can increase the organization's capacity to change. There are three types of changes: first, a change initiative, focusing on the implementation of programs, projects out new procedures. Both the change process in the organization by focusing on how to work together optimally. Third, cultural change will occur if the basic strategies of business organizations conceptualized back.

The fourth case is the new role of the Department of HRM will be able to achieve a competitive advantage by working with line managers and managers. Competitive advantage will be achieved with the three strategies, namely: innovation (innovation), quality improvement (quality enhancement) as well as cost reduction (cost reduction).

G. Components, Functions and Approach of Human Resource Management

The functions and components of HRM are;

- **Components**

Component Human Resource Management

Malay SP Hasibuan (2012: 12) divides the human resource management component to be:

- Entrepreneurs

Entrepreneur is every person who invests capital to earn income and the amount of income that is uncertain, depending on the profit achieved by the company.

- Employees

Employees are sellers and receive compensation in the amount had been determined beforehand. Employees obliged and bound to do the work are given and are entitled to compensation in accordance with the agreement.

The position of employees in the company is divided into:

a. Employees Operations

Operational Employee means any person who is directly obliged to complete the job themselves in accordance with their orders.

b. Managerial Employees

Managerial employee is any person who is entitled to rule his subordinates to do most of the work and done in accordance with the command.

c. Leaders

A leader is someone who uses the authority and leadership to direct others and is responsible for the work of the people in achieving a goal.

H. Functions

Functions of Human Resource Management

According to Malay SP Hasibuan (2012: 21), human resource management functions are as follows:

- Planning

  planning (human resources planning) is to plan workforce effectively and efficiently in order to fit the needs of the company in assisting the realization of the goal. Planning is done by setting the staffing program. Staffing program includes organizing, directing, controlling, procurement, development, compensation, integration, maintenance, discipline, and dismissal of employees.
- Organizing

  Organizing is organizing activities for all employees by setting the division of labor, labor relations, and the delegation of authority, integration, and coordination in the organization chart (organization chart). With good organization will help the realization of goals effectively.
- Direction

  Briefing (directing) is directing the activities of all employees, to cooperate and work effectively and efficiently to help achieve the objectives of the company, employees, and communities. The briefing is done by assigning the leadership of subordinates to do the entire job.
- Control

  is controlling the activities of all employees, in order to comply with company rules and working according to plan. If there are irregularities or errors, then held a corrective action and improvement plans. Controls of employees include attendance, discipline, behavior, cooperation, execution of work, and keep the work environment situation.

- Procurement

  Procurement is the process of withdrawal, selection, placement, orientation, and induction to get employees in accordance with the needs of the company.

- Development

  Development is the process of improving technical skills, theoretical, conceptual, and morale of employees through education and training. Education and training provided must comply with the requirements of the present work and future.

- Compensation

  Compensation is the provision of direct remuneration (direct) and indirect (indirect), money or goods to employees as compensation for services provided to the company. The principle of compensation is fair and reasonable. Fair interpreted in accordance with his performance, worthy interpreted to meet the primary needs and based on the minimum wage limit government and based on internal and external consistency.

- Integration

  Integration is an activity to unite the interests of the company and the needs of employees, in order to create harmonious cooperation and mutual benefit. The company makes a profit; the employees can meet the needs of his work.

- Maintenance

  Maintenance is an activity to maintain or improve the physical, mental, and the loyalty of employees, so that they remain willing to cooperate until retirement. Good maintenance is done with the welfare program based on the needs of the majority of employees as well as guided by internal and external consistency.

- Discipline

  Discipline is the desire and awareness to comply with company rules and social norms. Discipline is a function of human resource management is

paramount and key to the realization of the goal, because without good discipline, it is difficult to realize the goal of the maximum.

- Termination

  Termination (separation) is someone working breakup of a company. Dismissal of employees is due to the desire, the desire of the company, the employment contract ends, pensions, and other causes.

I. Approach to Human Resource Management.

According to Wilson Wake (2012: 24), the approach in the management of human resources is as follows:

1. Mechanical Approach

Mechanical approach is an approach that uses more power in the engine production process. Hiring people need treatment more difficult than the power of the engine, as the process was initiated from procurement, training, until termination of employment with them. Therefore, for the sake of achieving the great advantage, basically most companies choose to use the power of the engine in the production process.

2. Approach Paternalism

Paternalism approach is the approach taken by management in taking a stand as a father in the company to undertake protective action against the employee. This action is usually done to reduce or eliminate outside interference in the company. In the interests of the organization would be an advantage humans, because the needs of workers considered by the company.

3. Social Systems Approach

Social systems approach is the activities of the organization that is determined by factors outside the organization. Social systems approach may involve parties outside the organization who has a very important role in organizational activities.

2.7 Understanding Data

Data is the plural of datum. Data are particulars about something; it can be something that has meaning. Data can be defined as something that is known or considered or perceived.

Something unknown is usually obtained from observation or experiment, and it is related to time and place. Assumption or assumptions are an estimate or allegations that are still temporary, so it is not necessarily true. Therefore, the assumption or assumption of truth needs to be studied. According Arikunto (2002), the data is all the facts and figures that can be used as material to construct information, while the information is the data processing that is used for a purpose. So it can be concluded, that the data is the amount of information that can provide a snapshot of a situation, or a problem either in the form of figures or in the form of a category or description.

2.7.1 Data Types/classification

In accordance with the kinds or types of variables, data or recording the results also have as many types of variables. Data can be divided into specific groups based on criteria which accompany it, for example, according to the composition, the nature, the time of collection, and the retrieval source. According to data sharing arrangement:

According to the arrangement, the data are divided into single and random data or grouped data.

1. Random Data or Data Single or a single random data is data that has not been arranged or grouped into classes' interval.

Examples:
Measurement data weight class IX students (in kg): 35 37 39 47 39 32 34 45 50 39

2. Data group

Grouped data is data that has been arranged or grouped into classes' interval. Data groups are arranged in the form of a frequency distribution or frequency table. Examples:
Data values of students and the number of students who obtain a particular value for subjects of math class IX.

Continue	Value	Frequency
1-2	lll	3
3-4	lllll	5
5-6	lllll lllll	10
7-8	lllll lllll lllll	15
9-10	lllll ll	7

Table 2.2 Data Group

This group of data is divided into:

a. Discrete Group Data

   Data obtained from the results included in calculating the discrete data (number of children, etc.).

b. Data continuous group

   A continuous data were expressed to contribute if the data is measured in a scale continuous or data obtained from the results of the measure. Examples

Of continuous data, namely: height, weight, learning outcomes, motivation to learn and others.

Sharing of data according to its nature. By their very nature, the data is divided over the data quantitative and qualitative data.

a. Qualitative Data

Qualitative data is data that is not in the form of numbers. Qualitative data in the form of verbal statements, symbols or images. Example: color, sex, marital status, etc.

b. Quantitative Data

Quantitative data is data in the form of numbers.

Example: height, age, number, score learning outcomes, temperature, etc. Data-sharing according to the time of collection. By the time it was collected, the data is divided into periodic data (time series) and cross section data.

a. Periodic data (time series)

The data is data that is collected periodically from time to time to provide an overview of the development of activities / phenomena.

Example: 9 wide price development data staple for the past 10 months were collected every month.

b. Data Cross Section

c. Cross section data is data that is collected at a certain time to give a picture of the state of development or activities at that time.

Examples:

2000 population census data, the data of the UN high school students in 2012, and so on.

The division of the data by the source was taken.

According to sources of uptake, the data can be divided into two types, namely primary data and secondary data.

a. Primary Data

Primary data is data obtained or collected by people doing research or are concerned that require it. Primary data is also called the original data or new data.

b. Secondary Data

Secondary data is data that is obtained or compiled from sources that already exist. Data are usually obtained from the library or reports / documents those previous researchers. Secondary data is also called the data available.

Sharing of data accordingly to the scale of measurement.

The scale of measurement is the use of regulations notation of numbers in the measurement. According to the measurement scale, the data can be divided into four types, namely: the nominal data, ordinal data, the data interval, and ratio data.

1. **Nominal Data**

Nominal data is the data provided on the object or category that does not describe the position of objects or categories of objects or other categories, but just a label or code only. This data is classifying objects / categories into specific groups. Characterized nominal data can only be distinguished from one another and cannot be sorted / comparison. This data has the characteristics, namely:
a. Data categories are disjoint (one object only entered in one group).
b. Category data is not arranged in a logical eexamples of nominal scale data: Hair color, gender, ethnicity / race, religion and others.

2. **Ordinal Data**

Ordinal data is data that numbering objects arranged according to the size or category, from the lowest level to the highest level or vice versa by distance / range that is not necessarily the same. This data has the characteristic traits such as nominal data plus one more characteristic, which categories of data can be compiled / sorted by logical order and in accordance with the magnitude of the characteristics possessed.

Examples of ordinal scale data, namely: Level of education, group of employees, caste, etc.

3. **Data Interval**

Data with objects / categories can be distinguished among the data to one another can be sorted based on an attribute and has a range that provides information about the interval between each object and same category. The magnitude of the interval can be increased or reduced. This data has the same characteristics with the characteristics of the ordinal data plus one more characteristic, namely the sequence data categories have the same distance. In the interval data has no value absolute zero.

Examples of the interval scale data:

Temperature, IQ scores, scores of learning outcomes, etc.
Results of temperature measurement (temperature) using a thermometer which is expressed in degrees. Temperature range between 00 Celsius to 10 Celsius have the same distance to 10 Celsius to 20 Celsius. Therefore apply mathematical operations (+, -), for example, 150 Celsius + 150 = 300 Celsius. However, cannot be stated that the object has a temperature of 150 Celsius heat half the size of the object with a temperature of 300 Celsius. Likewise, it cannot be said that the object with a temperature of 00 Celsius has no temperature at all. Figures 00 Celsius have properties relative (not absolute). That is, when measured using a thermometer obtained 00 Fahrenheit Celsius = 320 Fahrenheit. Intellectual intelligence expressed in IQ. IQ range of 100 to 110 have the same distance by 110 to 120. However, people who may not otherwise have 150 IQ intelligence level 1.5 times from less that has an IQ of 100.

4. **Data ratio**

Ratio data is data that has the properties of nominal data, ordinal data and interval data, comes with ownership or absolute zero point value / absolute empirical meaning. Data can be divided or multiplied by the ratio. Thus, the data ratio has properties; can be distinguished, sorted, had the distance, and has absolute zero. Examples ratio scale data: Age, height, weight, etc.

Data from the measurement of the weight of an object is expressed in grams has all the properties as interval data. Object that weighs 1 kg significantly different with the object that weighs 2 kg. The size of the weight of the object can be sorted from the heaviest to the lightest. The difference between the object that weighs 1 kg to 2 kg weight ranges equal to the difference between the object that weighs 2 kg to 3 kg. Figures 0 kg showed no object (weight) is measured. Object that weighs 2 kg is 2 times heavier than the object that weighs 1 kg.

5. **Function Data**

Data basically functions: (1) to make a decision, (2) as the basis for planning, (3) as a means of controlling the implementation of or implementation of an activity, and (4) as the basis for evaluation of an activity.

2.8 Understanding Database

Basic Concepts Database

Database (database) can be thought of as a filing cabinet. The database is the entire data is stored in a database on each - each table or file according to function, so it can easily be perform searches desired data, so it will quickly gain the information necessary.

2.8.1 Definition of Database

According Jogiyanto (1999, p217), a database is a collection of data related to each other, are stored in the computer hardware and software used to manipulate it. The database is one important component in information systems, as a basis for providing information to users.

According to Connolly (2005, p15), the database is "a shared collection of logically related data and a description of this data designed to meet the information needs of an organization" which has the meaning set of data along with the related logical description, which is in the design to meet the information needs of an organization. Thus the definition of a database is a collection of information stored in the computer in a systematic way so that it can be checked using a computer program to obtain information from the database. The software used to manage and call query the database is called a database management system (DBMS).

2.8.2 Advantage of Database

With the inclusion of information data into a database system, the data can be accessed by everyone who has access to that data. In addition to the facilities shared data, the database has several advantages, among others, namely:

d. Reducing or eliminating duplication of data (data redundant),
e. Improve data integrity,
f. Maintaining the nature of the data independency,
g. Improve data security,
h. Maintain data consistency,
i. Easier data manipulation,
j. Data is easy to use and accessible.

2.8.3 Database Management System (DBMS)

Database Management System (DBMS) is software that allows users to define, designing, maintaining, and specify access control to the database. Some of the facilities provided by the DBMS, namely:

a. DBMS allows users to define the database via Data Definition Language (DDL). DDL provides the facility to the user to specify the data type, structure and regulatory restrictions (constraints) on the data to be stored into the database.
b. DBMS allows users to create, modify, delete, and display data from a database by using Data Manipulation Language (DML).
c. DBMS provides access control to the database, namely:
    - Security system, a system that can prevent unauthorized users to access the database.
    - Integrity systems, which are systems that maintain consistency of data storage.
    - Concurrency control system, a system that allows users to access the database simultaneously with other users.
    - Recovery control system, i.e. to restore the database to its previous state in the event of damage or fault in the hardware or software.
    - User-accessible catalog, namely the description of the data in a database.

2.9 Networking

According to Dr. Roy Winkelman, network consists of two or more computers that are linked in order to share resources (such as printers and CDs), exchange files, or allow electronic communications. The computers on a network may be linked through cables, telephone lines, radio waves, satellites, or infrared light beams. Below shown is Networking Standards.

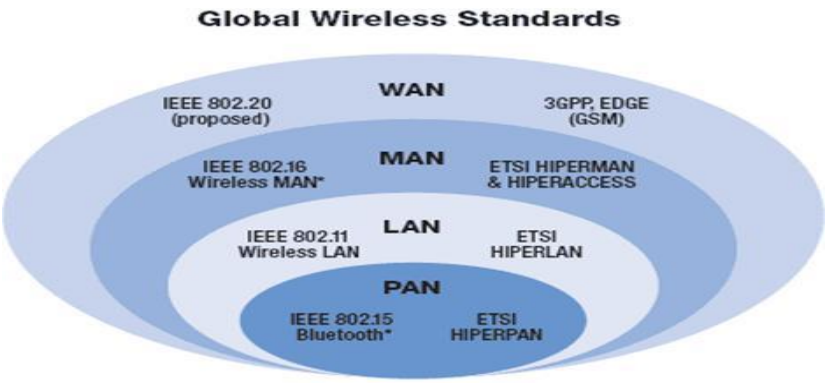


Figure 2.4 Networking Standards.

2.9.1 Local Area Network (LAN)

According to (Margaret Rouse, TechTarget), local area network (LAN) is a group of computers and associated devices that share a common communications line or wireless link to a server. Typically, a LAN encompasses computers and peripherals connected to a server within a small geographic area such as an office building or home. Computers and other mobile devices can share resources such as a printer or network storage.

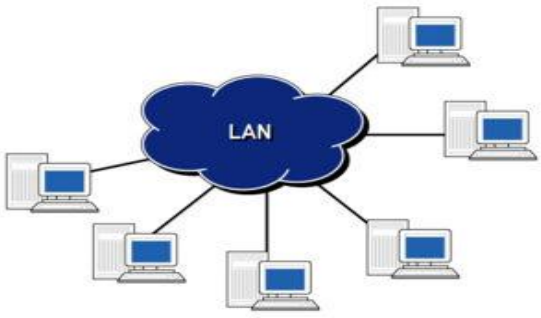


Figure 2.5 Local Area Network.

2.9.2 Wide Area Network (WAN)

A wide area network, or WAN, occupies a very large area, such as an entire country or the entire world. A WAN can contain multiple smaller networks, such as LANs or MANs. The Internet is the best-known example of a public WAN.

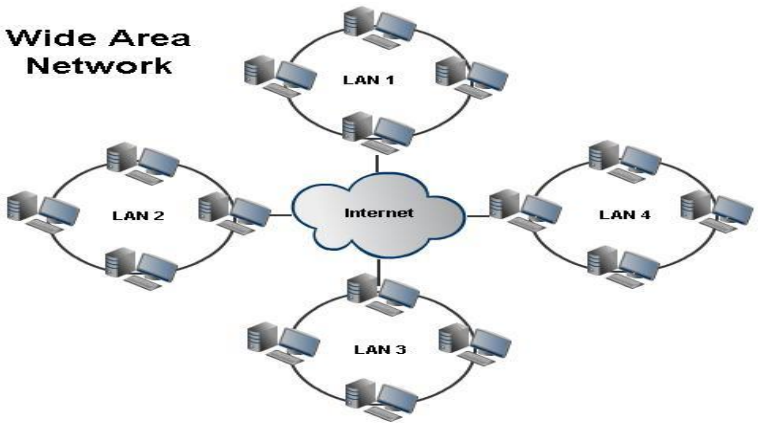


Figure 2.6 Wide Area Network.

2.9.3 Personal Area Network (PAN)

According (Paul Zandbergen, University of British Columbia, Geographic Information Systems, statistics and computer programming) states that Personal Area Network, or PAN, is a computer network organized around an individual person within a single building. This could be inside a small office or residence. A typical PAN would include one or more computers, telephones, peripheral devices, video game consoles and other personal entertainment devices.



Figure 2.7 Personal Area Network.

2.9.4 Metropolitan Area Network (MAN)

According to (Paul Zandbergen, University of British Columbia, Geographic Information Systems, statistics and computer programming), metropolitan area network, or MAN, consists of a computer network across an entire city, college campus or small region. A MAN is larger than a LAN, which is typically limited to a single building or site. Depending on the configuration, this type of network can cover an area from several miles to tens of miles. A MAN is often used to connect several LANs together to form a bigger network. When this type of network is specifically designed for a college campus, it is sometimes referred to as a campus area network, or CAN.

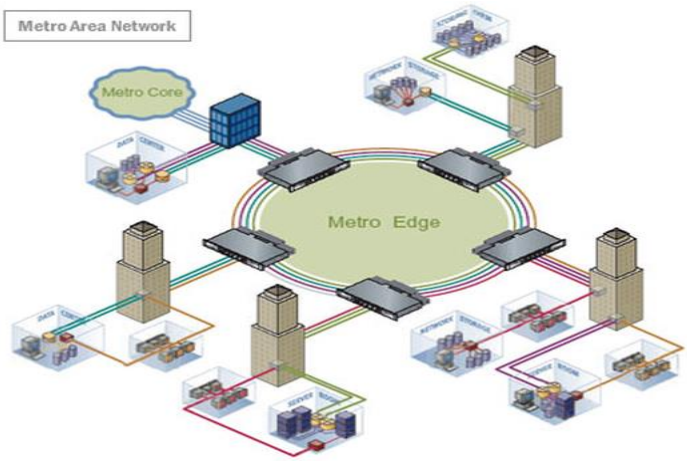


Figure 2.8 Metropolitan Area Network.

2.9.5 Storage Area Network (SAN)

A storage area network (SAN) is any high-performance network whose primary purpose is to enable storage devices to communicate with computer systems and with each other (SINA, Advancing Storage and Information Technology).

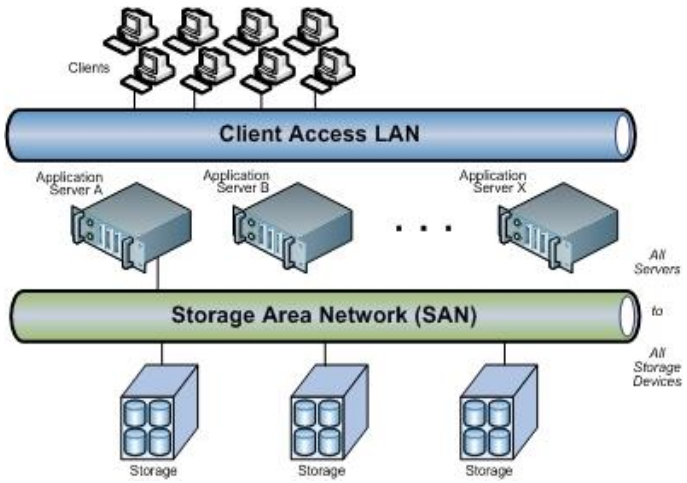


Figure 2.9 Storage Area Network.

2.9.6 Enterprise Private Network (EPN)

An enterprise private network is a computer network that helps enterprise companies with a number of disparate offices connect those offices to each in a secure way over a network. An enterprise private network is mainly set up to share computer resources (Techopedia).

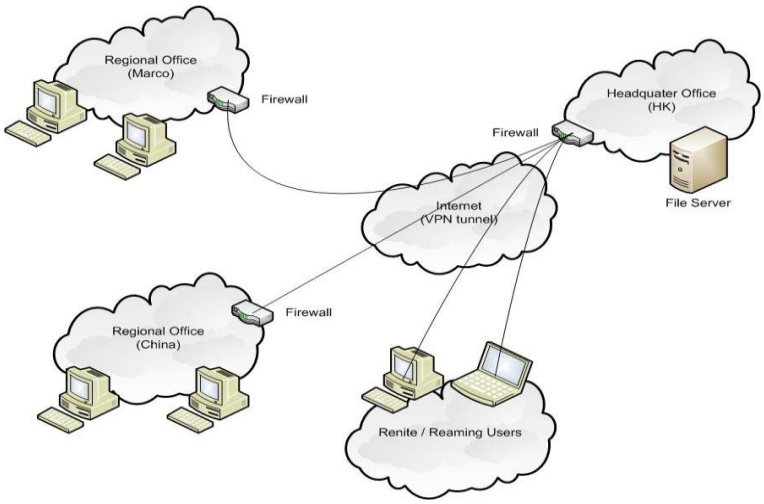


Figure 2.10 Enterprise Private Network.

2.9.7 Virtual Private Network (VPN)

Virtual private network is defined by (Vangie Beal, Webopedia), is a network that is constructed by using public wires — usually the Internet — to connect to a private network, such as a company's internal network. There are a number of systems that enable you to create networks using the Internet as the medium for transporting data. These systems use encryption and other security mechanisms to ensure that only authorized users can access the network and that the data cannot be intercepted.

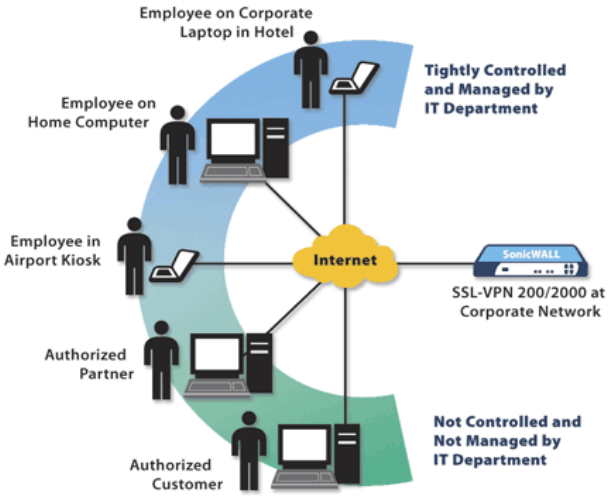


Figure 2.11 Virtual Private Network.

2.10 Network Topology

What is a network topology? In communication networks, a topology is a usually schematic description of the arrangement of a network, including its nodes and connecting lines. There are two ways of defining network geometry: the physical topology and the logical (or signal) topology. (Margaret Rouse, WhatIs.com)

2.10.1 Bus Topology

Bus topology is a network type in where every computer and network device is connected to single cable.

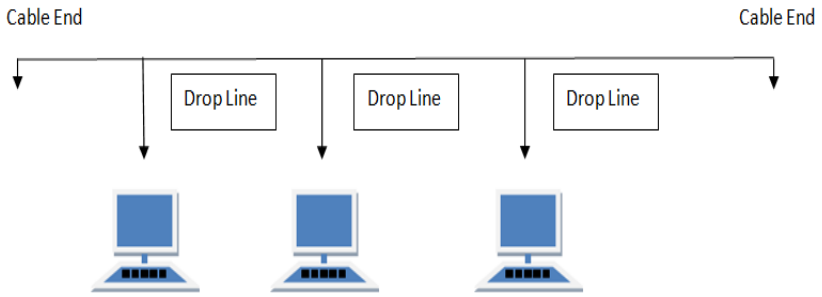


Figure 2.12 Bus Topology.

2.10.2 Star Topology

In this type of topology all the computers are connected to a single hub through a cable. This hub is the central node and all others nodes are connected to the central node.

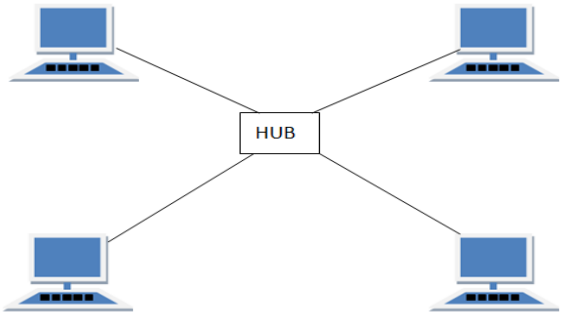


Figure 2.13 Star Topology.

2.10.3 Token Ring Topology

A Token Ring network is a local area network (LAN) in which all computers are connected in a ring or star topology and a bit- or token-passing scheme is used in order to prevent the collision of data between two computers that want to send messages at the same time (TechTarget, April 2007).

It is called ring topology because it forms a ring as each computer is connected to another computer, with the last one connected to the first. Exactly two neighbours for each device

.

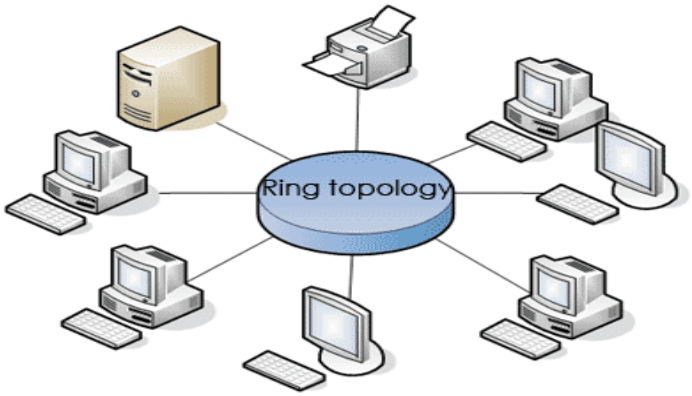


Figure 2.14 Ring Topology.

2.10.4 Mesh Topology

It is a point-to-point connection to other nodes or devices. Traffic is carried only between two devices or nodes to which it is connected. Mesh has n (n-2)/2 physical channels to link hn devices.

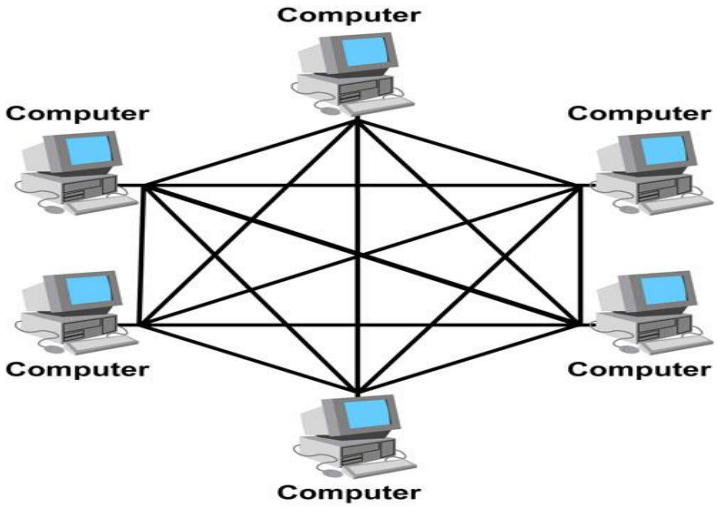


Figure 2.15 Mesh Topology.

2.10.5 Tree Topology

It has a root node and all other nodes are connected to it forming a hierarchy. It is also called hierarchical topology. It should at least have three levels to the hierarchy.

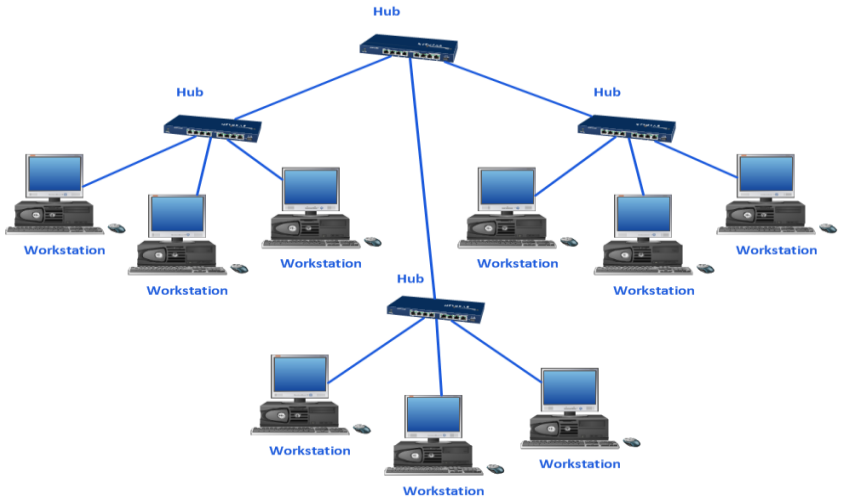


Figure 2.16 Tree Topology.

2.10.6 Hybrid Topology

It is two different types of topologies which is a mixture of two or more topologies. For example if in an office in one department ring topology is used and in another star topology is used, connecting these topologies will result in Hybrid Topology (ring topology and star topology).

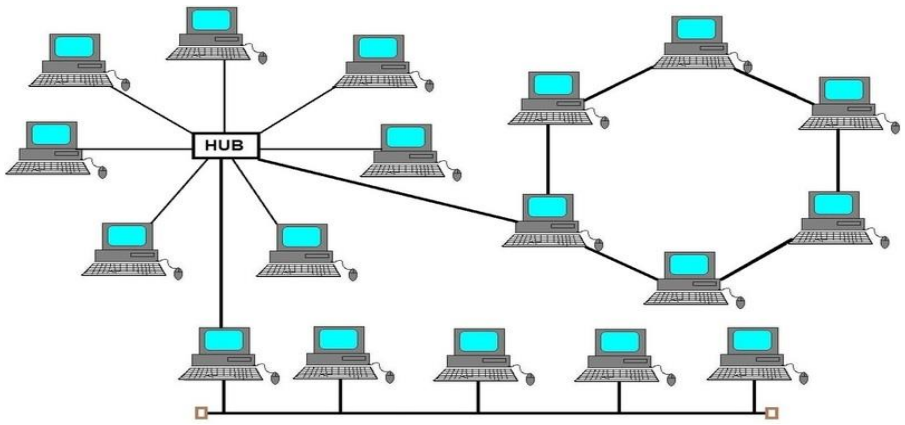


Figure 2.17 Hybrid Topology.

2.11 Approach Methodology

The four main Methodology approaches:

2.11.1 Quantitative Research

Quantitative research is generally associated with the positivist/postpositivist paradigm. It usually involves collecting and converting data into numerical form so that statistical calculations can be made and conclusions drawn. The main emphasis of quantitative research is on deductive reasoning which tends to move from the general to the specific. This is sometimes referred to as a top down approach. The validity of conclusions is shown to be dependent on one or more premises (prior statements, findings or conditions) being valid. (Alzheimer Europe, 2009)

2.11.2 Qualitative research

Qualitative research is the approach usually associated with the social constructivist paradigm which emphasises the socially constructed nature of reality. It is about recording, analysing and attempting to uncover the deeper meaning and significance of human behaviour and experience, including contradictory beliefs, behaviours and emotions. Researchers are interested in gaining a rich and complex understanding of people's experience and not in obtaining information which can be generalized to other larger groups.

The approach to data collection and analysis is methodical but allows for greater flexibility than in quantitative research. Data is collected in textual form on the basis of observation and interaction with the participants e.g. through participant observation, in-depth interviews and focus groups. It is not converted into numerical form and is not statistically analysed. (Alzheimer Europe, 2009)

2.11.3 Pragmatic approach to research (mixed methods)

The pragmatic approach to science involves using the method which appears best suited to the research problem and not getting caught up in philosophical debates about which is the best approach. Pragmatic researchers therefore grant themselves the freedom to use any of the methods, techniques and procedures typically associated with quantitative or qualitative research. They recognise that every method has its limitations and that the different approaches can be complementary. (Alzheimer Europe, 2009)

2.11.4 Advocacy/participatory approach to research (emancipatory)

To some degree, researchers adopting an advocacy/participatory approach feel that the approaches to research described so far do not respond to the needs or situation of people from marginalised or vulnerable groups. As they aim to bring about positive change in the lives of the research subjects, their approach is sometimes described as emancipatory. It is not a neutral stance. The researchers are likely to have a political agenda and to try to give the groups they are studying a voice. As they want their research to directly or indirectly result in some kind of reform, it is important that they involve the group being studied in the research, preferably at all stages, so as to avoid further marginalising them. (Alzheimer Europe, 2009)

2.12 Development Methodology

Types of Software developing life cycles (SDLC) or Development Methodology.

2.12.1 Waterfall Model

The waterfall Model is a linear sequential flow. In which progress is seen as flowing steadily downwards (like a waterfall) through the phases of software implementation. This means that any phase in the development process begins only if the previous phase is complete. The waterfall approach does not define the process to go back to

the previous phase to handle changes in requirement. The waterfall approach is the earliest approach that was used for software development.

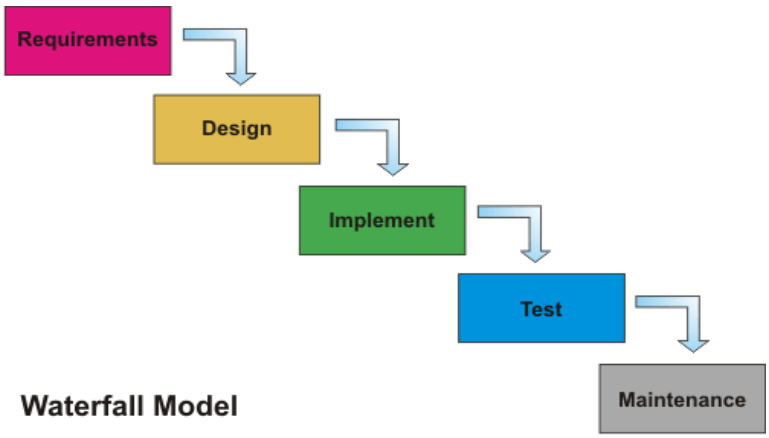


Figure 2.18 Waterfall Model.

2.12.2 V-Shaped Model

It is an extension for waterfall model, Instead of moving down in a linear way, the process steps are bent upwards after the coding phase, to form the typical V shape. The major difference between v-shaped model and waterfall model is the early test planning in v-shaped model.

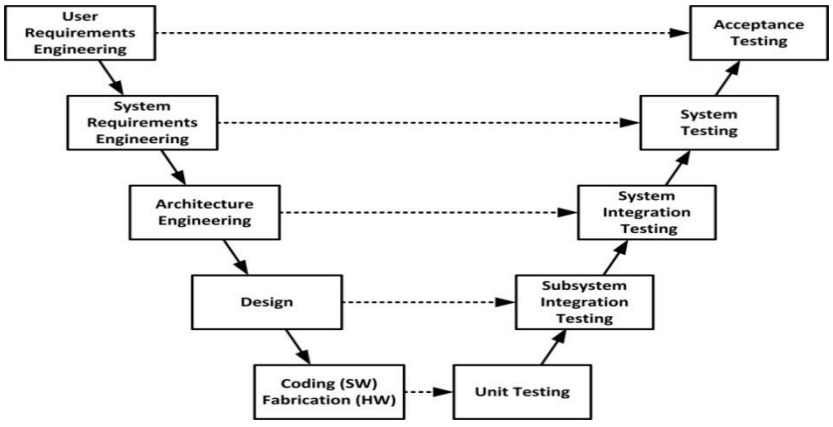


Figure 2.19 V-Model.

2.12.3 Evolutionary Prototyping Model

It refers to the activity of creating prototypes of software applications, for example, incomplete versions of the software program being developed. It is an activity that can occur in software development. It used to visualize some component of the software to limit the gap of misunderstanding the customer requirements by the development team. This also will reduce the iterations may occur in waterfall approach and hard to be implemented due to inflexibility of the waterfall approach. So, when the final prototype is developed, the requirement is considered to be frozen.

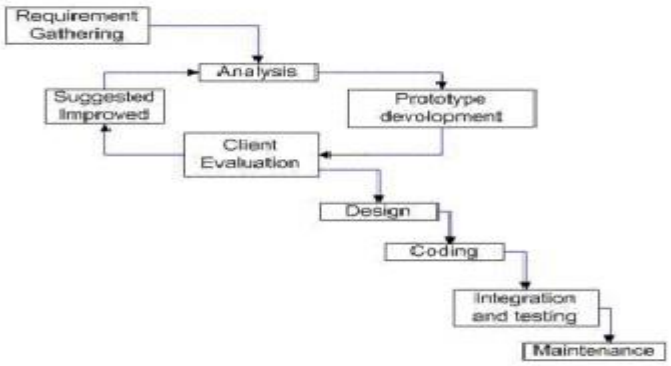


Figure 2.20 Evolutionary Model.

2.12.4 Spiral Method (SDM)

It is combining elements of both design and prototyping-in-stages, in an effort to combine advantages of top-down and bottom-up concepts. This model of development combines the features of the prototyping model and the waterfall model. The spiral model is favored for large, expensive, and complicated projects. This model uses many of the same phases as the waterfall model, in essentially the same order, separated by planning, risk assessment, and the building of prototypes and simulations.

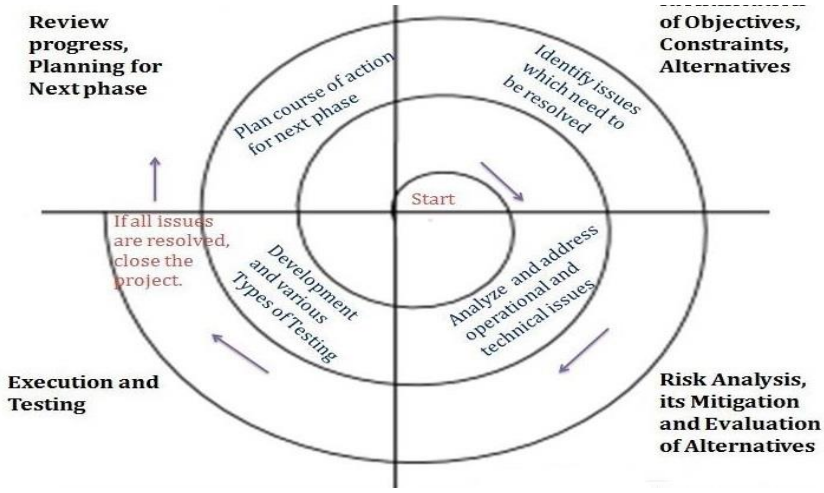


Figure 2.21 Spiral Model *(source: ianswer4u.com)*

2.12.5 Iterative and Incremental Method

It is developed to overcome the weaknesses of the waterfall model. It starts with an initial planning and ends with deployment with the cyclic interactions in between. The basic idea behind this method is to develop a system through repeated cycles (iterative) and in smaller portions at a time (incremental), allowing software developers to take advantage of what was learned during development of earlier parts or versions of the system.

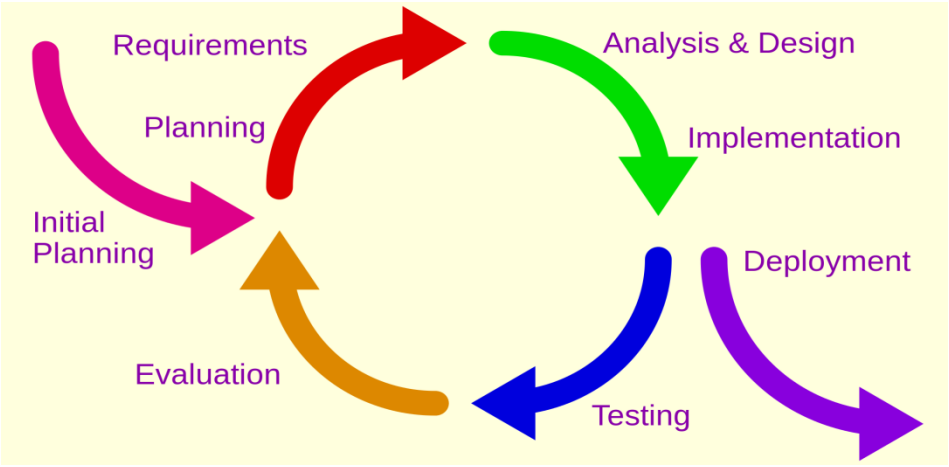


Figure 2.22 Interative and Incremental Method (*source: en.wikipedia.org*)

2.12.6 Extreme programming (Agile Development)

It is based on iterative and incremental development, where requirements and solutions evolve through collaboration between cross-functional teams.



Figure 2.23 Agile Development (*source: www.linkedin.com*)

2.13 Hypertext Transfer Protocol (HTTP)

According to (Bradley Mitchell, Wireless/Networking Expert), the Hypertext Transfer Protocol - provides a standard for Web browsers and servers to communicate.

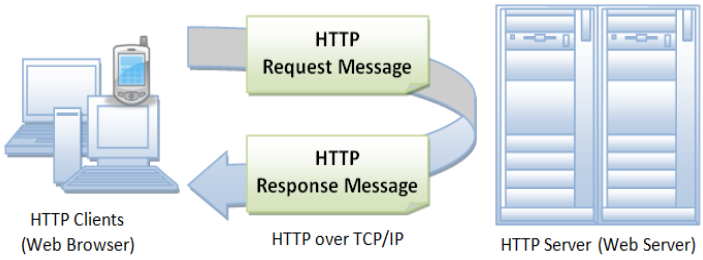


Figure 2.24 Hypertext Transender Transfer Proto.

2.14 Web Server

What does Web Server mean?

A Web server is a system that delivers content or services to end users over the Internet. A Web server consists of a physical server, server operating system (OS) and software used to facilitate HTTP communication . A Web server is also known as an Internet server. (Cory Janssen, Techopedia)

A web server is an information technology that processes requests via HTTP, the basic network protocol used to distribute information on the World Wide Web. The term can refer either to the entire computer system, an appliance, or specifically to the software that accepts and supervises the HTTP requests. (Wikipedia)

2.15 Web Browser

Short for Web browser, a browser is a software application used to locate, retrieve and display content on the World Wide Web, including Web pages, images, video and other files. As a client/server model, the browser is the client run on a computer that contacts the Web server and requests information. The Web server sends the information back to the Web browser which displays the results on the computer or other Internet-enabled device that supports a browser.

A browser is software that is used to access the internet. A browser lets you visit websites and do activities within them like login, view multimedia, link from one site to another, visit one page from another, print, send and receive email, among many

other activities. The most common browser software titles on the market are: Microsoft Internet Explorer, Google's Chrome, Mozilla Firefox, Apple's Safari, and Opera. Browser availability depends on the operating system your computer is using (for example: Microsoft Windows, Linux, Ubuntu, Mac OS, among others).

(All about cookiest)

2.15.1 APPROACH

The approach can be interpreted as a starting point or our view of the learning process. Teacher-centered approach lowers the learning strategy directly (direct instruction), or expository deductive learning. Meanwhile, the learning approach is student-centered learning strategies lowers discovery and inquiry and inductive learning strategies (Sanjaya, 2008: 127).

2.15.2 METHOD

The method is an elaboration of approaches. One approach can be translated into a variety of methods. The method is a learning procedure that is focused on achieving the goal. Techniques and tactics taught the elaboration of learning methods.

2.15.3 ENGINEERING

Technique is the way a person in order to implement a method. For example, the way how that should be done so that the lecture method is done effectively and efficiently? Thus before a lecture process should pay attention to the condition and situation.

2.15.4 MODEL

The learning model is a form of learning that is reflected from start to finish typically presented by the teacher in the classroom. In the model of instructional strategies for achieving competence are students with approaches, methods, and techniques pembel

ajaran.Nah, the following is a brief review of the differences in the term.

2.15.5 STRATEGY

Learning strategy can be interpreted as a plan that contains a series of activities designed to achieve specific educational objectives (JR David in Sanjaya, 2008: 126). Further described is a learning strategy learning activities that must be done so that teachers and students learning objectives can be achieved effectively and efficiently (Kemp in Sanjaya, 2008: 126). The term strategy is often used in many contexts with meaning is always the same. In the context of teaching strategies can be interpreted as a general pattern of action teacher-learners in the manifestation of the teaching activity (Ahmad Rohani, 2004: 32). Meanwhile, Joyce and Weil prefer to use the term teaching models instead of using teaching strategies (Joyce and Weil in Spiritual, 2004: 33.