## UNIT IV

1. Information technology for competitive advantages
2. Firm in its environment
3. What are the information resources?
4. Who manages the information resources?
5. Strategic planning for information resources,
6. End – User computing as a strategic issue,
7. Information resource management concept.


## 1. INFORMATION TECHNOLOGY FOR COMPETITIVE ADVANTAGES

A firm can achieve competitive advantage in many ways,

- Providing products and services at a low price
- Providing products and services that are better than those of the competitors
- Meeting the special needs of certain market segments

In the computer field, **competitive advantage** refers to the use of information to gain leverage in the marketplace.

**Porter's value chains:**



**Fig.4.1 A Value Chain**

- Most organizations engage in hundreds, even thousands, of activities in the process of converting inputs to outputs.
- The specific activities through which firms can create a competitive advantage, is called as **value chain activity**.
- A value chain is a chain of activities. Products pass all activities of the chain in order and at each activity the product gains some value.

- The chain of activities gives the products more added value than the sum of added values of all activities.
- It is important not to mix the concept of the value chain, with the costs occurring throughout the activities.
- A diamond cutter can be used as an example of the difference. The cutting activity may have a low cost, but the activity adds too much of the value of the end product, since a rough diamond is a lot less valuable than a cut diamond.

These activities can be classified generally as either **primary** or **support** activities that all businesses must undertake in some form.

According to Porter (1985), the primary activities are:

1. **Inbound Logistics** - involve relationships with suppliers and include all the activities required to receive, store, and disseminate inputs.
2. **Operations** - are all the activities required to transform inputs into outputs (products and services).
3. **Outbound Logistics** - include all the activities required to collect, store, and distribute the output.
4. **Marketing and Sales** - activities inform buyers about products and services, induce buyers to purchase them, and facilitate their purchase.
5. **Service** - includes all the activities required to keep the product or service working effectively for the buyer after it is sold and delivered.

Secondary activities are:

1. **Procurement** - is the acquisition of inputs, or resources, for the firm.
2. **Human Resource management** - consists of all activities involved in recruiting, hiring, training, developing, compensating and (if necessary) dismissing or laying off personnel.
3. **Technological Development** - pertains to the equipment, hardware, software, procedures and technical knowledge brought to bear in the firm's transformation of inputs into outputs.
4. **Infrastructure** - serves the company's needs and ties its various parts together, it consists of functions or departments such as accounting, legal, finance, planning, public affairs, government relations, quality assurance and general management.

**Value system:**

Ten or twenty years ago it might have been adequate for management to concentrate on creating the firm's value chain. Today, management is alert to additional advantages that can be achieved by linking the firm's value chain to those of other organizations. The linkage of value chains of multiple firms is called a value system.
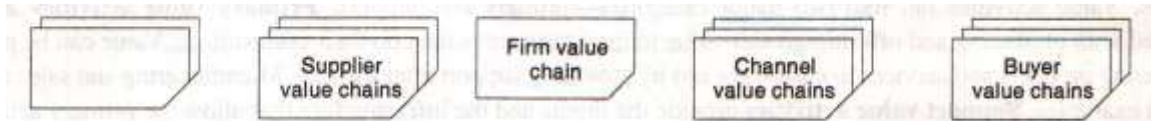
**Fig.4.2 A Value System**

In figure, a firm can link its value chain to those of its suppliers by implementing systems that make input resources available when needed.

Example include just in time agreement with a suppliers to ship raw materials so that they arrive just before they are to be used in the production process, thus minimizing storage costs.

A firm can also link its value chain with those of its distribution channel members. An example is an airline that allows travel agents to access the airlines computerized reservation system to make it easier for the agents to book passengers on the airlines flights.

When the buyers of the firm's products are also organizations, their value chains can also be linked to those of the firm and its channel members. For example, pharmaceutical manufacturers can attach retailer's price labels to its products prior to shipment, thus saving the retailers that expense.

## 2. FIRM IN ITS ENVIRONMENT

Firm is a physical system, which is managed through the use of a conceptual system. The physical system of the firm is a closed-loop system because it is controlled by management, using feedback information to ensure that objectives are met. The firm is also an open system in that it interfaces with its environment.

A firm takes resources from its environment, transforms the resources into products and services, and returns the transformed resources to its environment.

The environment is of great importance to the firm. The environment is the very reason for the firm's existence.

**The eight environmental elements:**

The environment of one firm is not exactly the same as the environment of another. A bank has a different environment than does a sporting goods store or a church.

We can define eight major types of elements that exist in the environments of all firms. These environmental elements are organizations and individuals that exist outside the firm and have a direct or indirect influence on the firm.
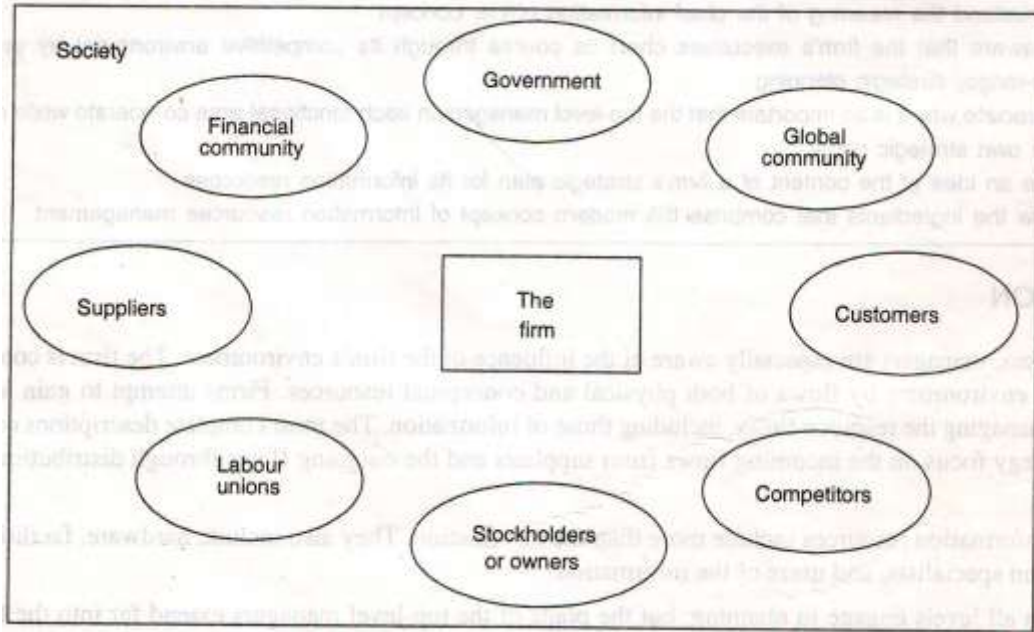
**Fig.4.3 Eight Environmental elements**

These eight elements exist in a larger system called society.

**Supplier** also called vendors, supply the materials, machines, services, and information that are used by the firm to produce its products and services.

These products and services are marketed to the firm's **customers**, which include both current and prospective users.

**Labor unions** are the organizations of both skilled and unskilled workers.

The **financial community** consists of institutions that influence the money resources that are available to the firm. Example includes banks, saving and loan associations, credit unions and other leading institutions and investment firms.

**Stockholders or owners** are those who invest money in the firm and represent the highest level of management.

**Competitors** include all of the organizations that compete with the firm in its marketplace.

The **government**, on the national, state or provincial, and local levels, provides constraints in the form of laws and regulations; it also provides assistance in the form of purchases, information, and funds.

The **global community** is the geographic area where the firm performs its operations. The firm demonstrates its responsibility to the global community by respecting the

natural environment, providing products and services that contribute to quality of life, and conducting its operations in an ethical manner.

**Environmental Resource Flows:**

- The firm is connected to its environmental elements through resource flows, including:
- Some of the resources flow more frequently than do others. Very common flow includes
  - information flowing from customers;
  - materials flowing to customers;
  - money flowing to stockholders;
  - machinery flowing from suppliers;
  - personnel flowing from suppliers; and
  - the global community and labor unions
- Less frequent flows include: the money flow from the government, the material flow to suppliers, and the personnel flow to competitors
- The only resource that connects the firm with all of the elements is information.

## 3. WHAT ARE THE INFORMATION RESOURCES?

A firm's information resources consist of:
- Computer hardware
- Computer software
- Information specialists
- Users
- Facilities
- Databases
- Information

## 4. WHO MANAGES THE INFORMATION RESOURCES?

The earlier firms who started using computers gave the responsibility of managing the resources to a unit of computer specialists. This unit is called information services (IS). Now this type of unit is highly promoted and executives are included in its top managers list. These are the executives who take top decisions of the firm.

**Chief information officers (CIO)**

Similarly there is the person called the CIO, who contributes managerial skills to solving problems relating not only to the information resources but also to other areas of the firm's operations. He is the manager of the information services.

A CIO must have
- Strong organizational leadership
- Financial management skills

- Strong communication skills
- Leadership quality that can build and inspire a high performing team.

An information service manager can perform as a CEO by taking the following advice:
- Spend time with the business and in business training. Learn the business, not the technology.
- Build partnerships with business units and line management.
- Focus on improving basic business processes.
- Explain IS costs in business terms
- Be non defensive.

## 5. STRATEGIC PLANNING FOR INFORMATION RESOURCES

Strategic planning is an organization's process of defining its strategy, or direction, and making decisions on allocating its resources to pursue this strategy, including its capital and people. Various business analysis techniques can be used in strategic planning, including SWOT analysis (Strengths, Weaknesses, Opportunities, and Threats) and PEST analysis (Political, Economic, Social, and Technological analysis).

**Functional strategic planning:**

- When a firm organizes its executives into an executive committee, this group invariably assumes responsibility for strategic planning.
- When a firm's executives are fully committed to strategic planning, they see a need for each functional area to develop its own strategic plan.
- One approach to functional strategic planning would be for each area to establish its own plan independently of the others.
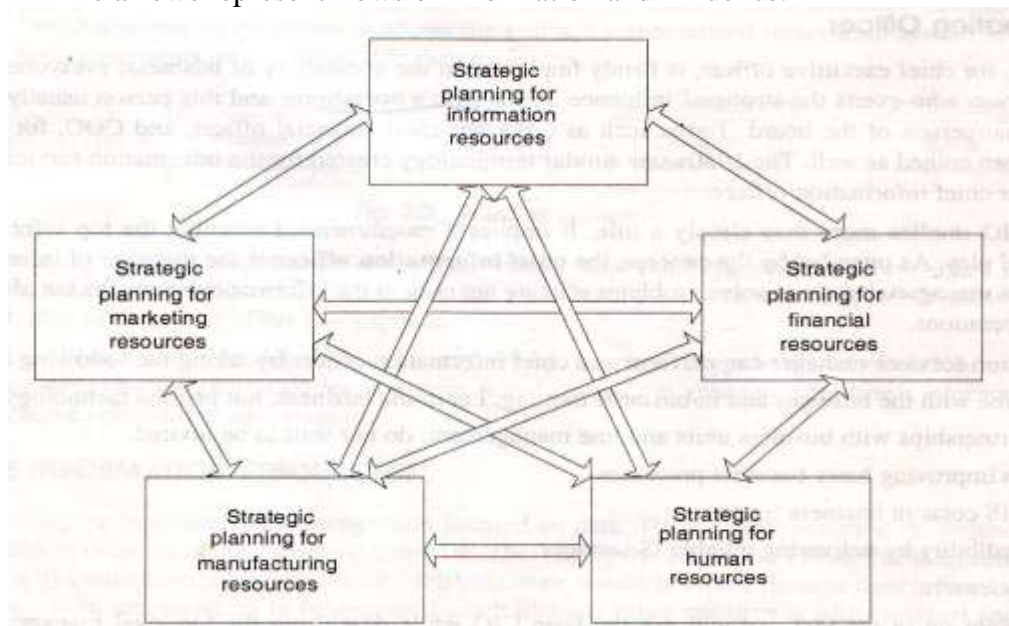- The arrows represent flows of information and influence.



**Fig.4.4 The functional area should co-operate**

**Strategic planning for information resources:**

During the early years, an information service has probably devoted more attention to strategic planning. The first term used to describe this activity was strategic set transformation. More recently the term strategic planning for information resources has become popular.

**Strategy set transformation:**

**A basic weakness in strategy set transformation is that the functional areas do not always have the resources to ensure the accomplishment of the firm's strategic objectives.**
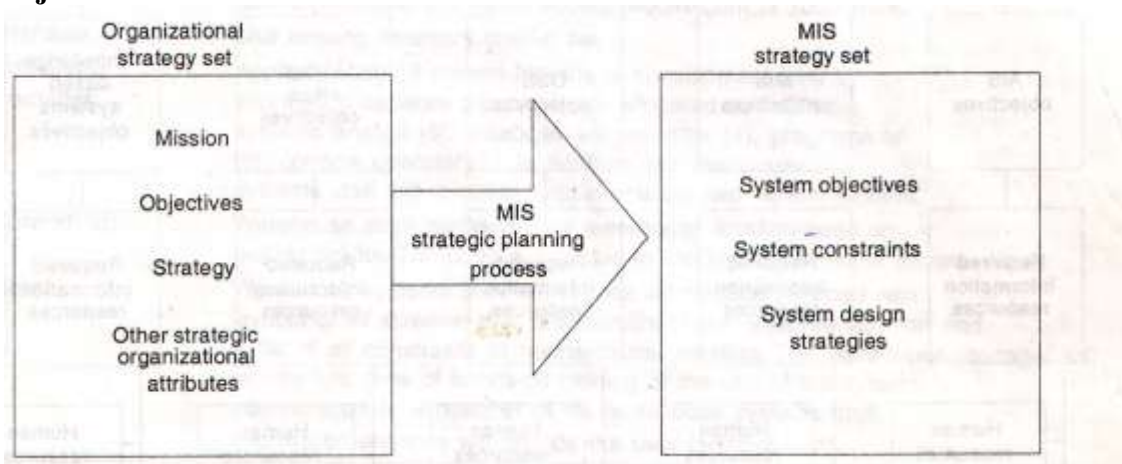


**Fig.4.5 Strategy set transformation**

**SPIR approach:**

- A solution to the problem of inadequate information resources is strategic planning for information resources (SPIR).
- In SPIR approach, the strategic plans for information services and the firm are developed concurrently.
- The firm's plan reflects the support that can be provided by information services, and the information services plan reflects the future demands for system support.
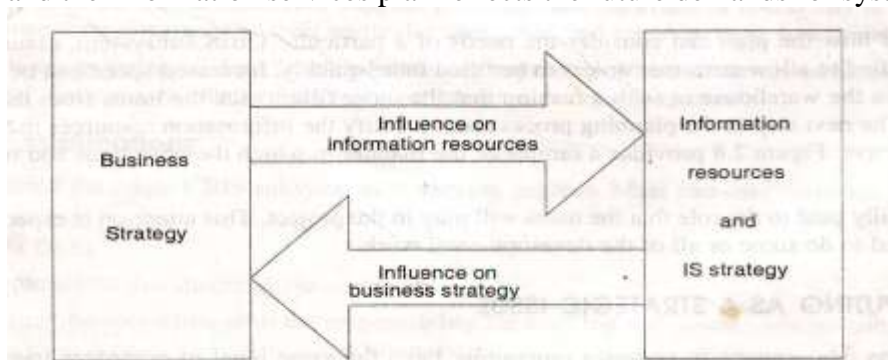


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**Fig.4.6 Strategic planning for information resources**

**Content of a strategic plan for information resources:**

Strategic plan should specify
  i.    The objectives to be achieved by each CBIS system during the time period covered by the plan.
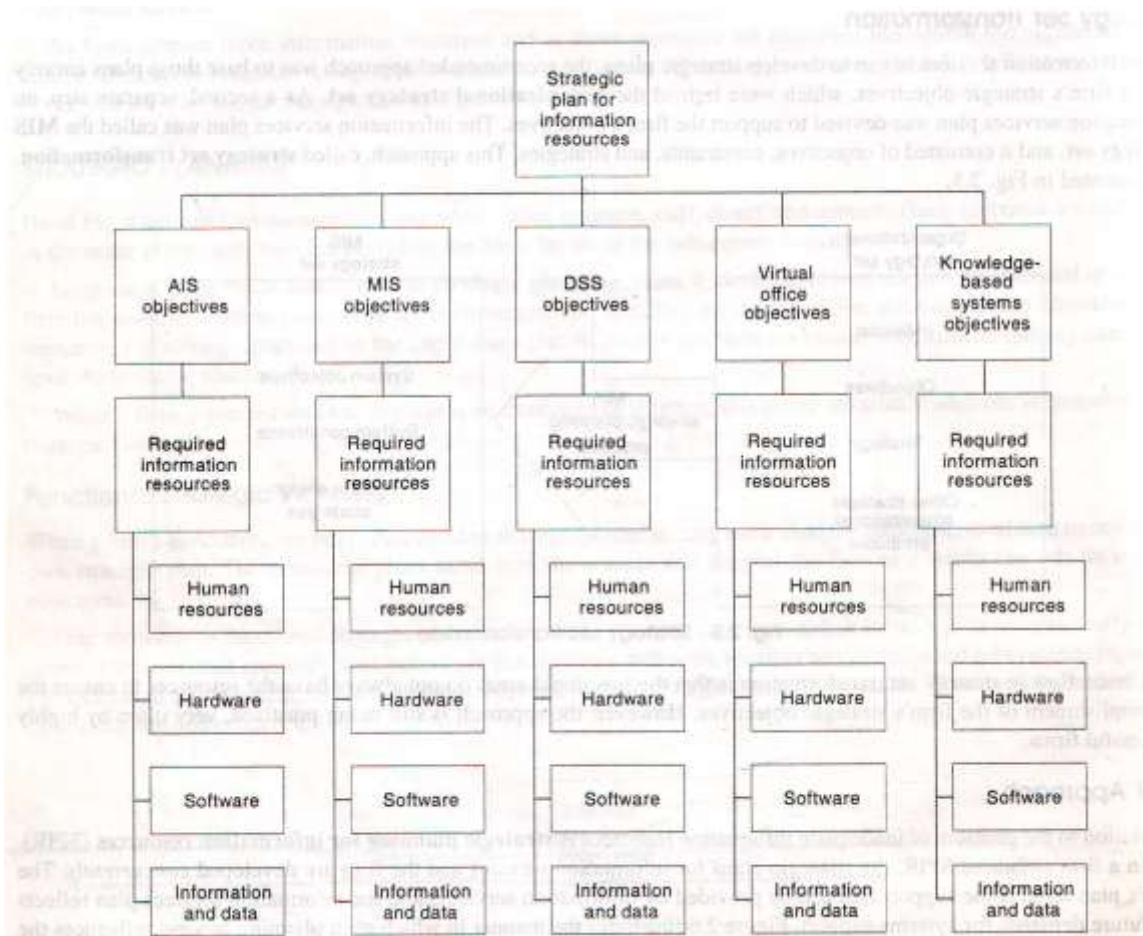  ii.   The information resources necessary to meet the objectives.



**Fig.4.7 Basic framework of a strategic plan for information resources**

## 6. END-USER COMPUTING (EUC) AS A STRATEGIC ISSUE

It is possible to classify end users into four categories, based on their computer capabilities.
 • **Menu-level end users:** some end users are unable to create their own software, but they can communicate with prewritten software by means of menus such as those featured by windows-based software.
 • **Command-level end users:** some end users have capabilities for using prewritten software that go beyond menu selection. These end users can use the command language of the software to perform arithmetic and logical operations on the data.

- **End-user programmers:** some end user can use programming languages such as BASIC or C++, and they can develop custom programs to meet their own needs.
- **Functional support personnel:** in some firms, information specialists are members of functional units rather than information services.

**Types of End-User Application**

Most end-user computing applications have been restricted to:
- Relatively simple DSSs
- Virtual office applications that meet individual needs

**Benefits of End-User Computing**

- **It matches the developer capabilities to system challenges:** the shift in the workload for systems development to user areas frees up the specialists to concentrate on the organizational and complex systems, enabling the specialists to do a better job in theses areas. The specialists also have more time to devote to maintain existing systems-an important area of responsibility.
- **Reduce communication gap:** a difficulty that has plagued systems development since the first days of computing has been the communications between the user and the information specialists. The user understands the problem area better than the computing technology. The specialists, is expert in the technology but not in the problem area. By letting the users develop their own application, there is no communication gap, because there is no need for communication.

**Risks of End-User Computing**

- **Poorly aimed systems:** end user may apply the computers to applications that should be performed some other way, such as manually.

- **Poorly designed and documented systems:** end users, although they may have high levels of computer literacy, cannot match the professionalism of information specialists when it comes to designing systems. Also in the rush to get systems up and running end users tend to overlook the need to document their designs so that the systems can be maintained.

- **Inefficient use of information resources:** when there is no control over acquisition of hardware and software, the firm can end up with incompatible hardware and redundant software.

- **Loss of data integrity:** end users may not exercise the necessary care in entering data into the firm's data base. Other users use this erroneous data, assuming it to be accurate. The result is contaminated output that can cause managers to make the wrong decisions.

- **Loss of security:** end users may not safeguard their data and software. Diskettes are left lying on desktops, printouts are tossed in wastebasket, and doors to computers rooms are left unlocked. Computer criminals can gain access to the system and harm the firm in many ways.

- **Loss of control:** users develop systems to meet their own needs without conforming to a plan that ensures computer support for the firm.

## 7. INFORMATION RESOURCES MANAGEMENT CONCEPT

Information resource management (IRM) is an activity that is pursued by mangers on all levels of the firm for the purpose of identifying, acquiring and managing the information resources needed to satisfy information needs.

### IRM elements

In order to achieve fully IRM, it is necessary that a set of conditions exist. These conditions include:

- **Recognition that competitive advantage can be achieved by means of superior information resources:** the firm's executives and other managers who engage in strategic planning appreciate that the firm can achieve superiority over competitors by managing information flows.

- **Recognition that information services are a major functional area:** the firm's organizational structure reflects the fact that an information service has an important equal to other major functional areas.

- **Recognition that the CIO is a top-level executive:** the CIO contributes, when appropriate, to decision making that affects all of the firm's operations, not just those of information services. This recognition is most easily demonstrated by including the CIO on the executive committee.

- **A consideration of the firm's information resources when engaging in strategic planning:** when executives engage in strategic planning for the firm, they consider the information resources necessary to achieve the strategic objectives.

- **A formal strategic plan for information resources:** a formal plan exists for acquiring and managing information resources. The resources should include these in user areas as well as information services.

- **A strategy for simulating and managing end-user computing:** the strategic plan for information resources addresses the issue of making information resources available to end users, while at the same time maintaining control over these resources.
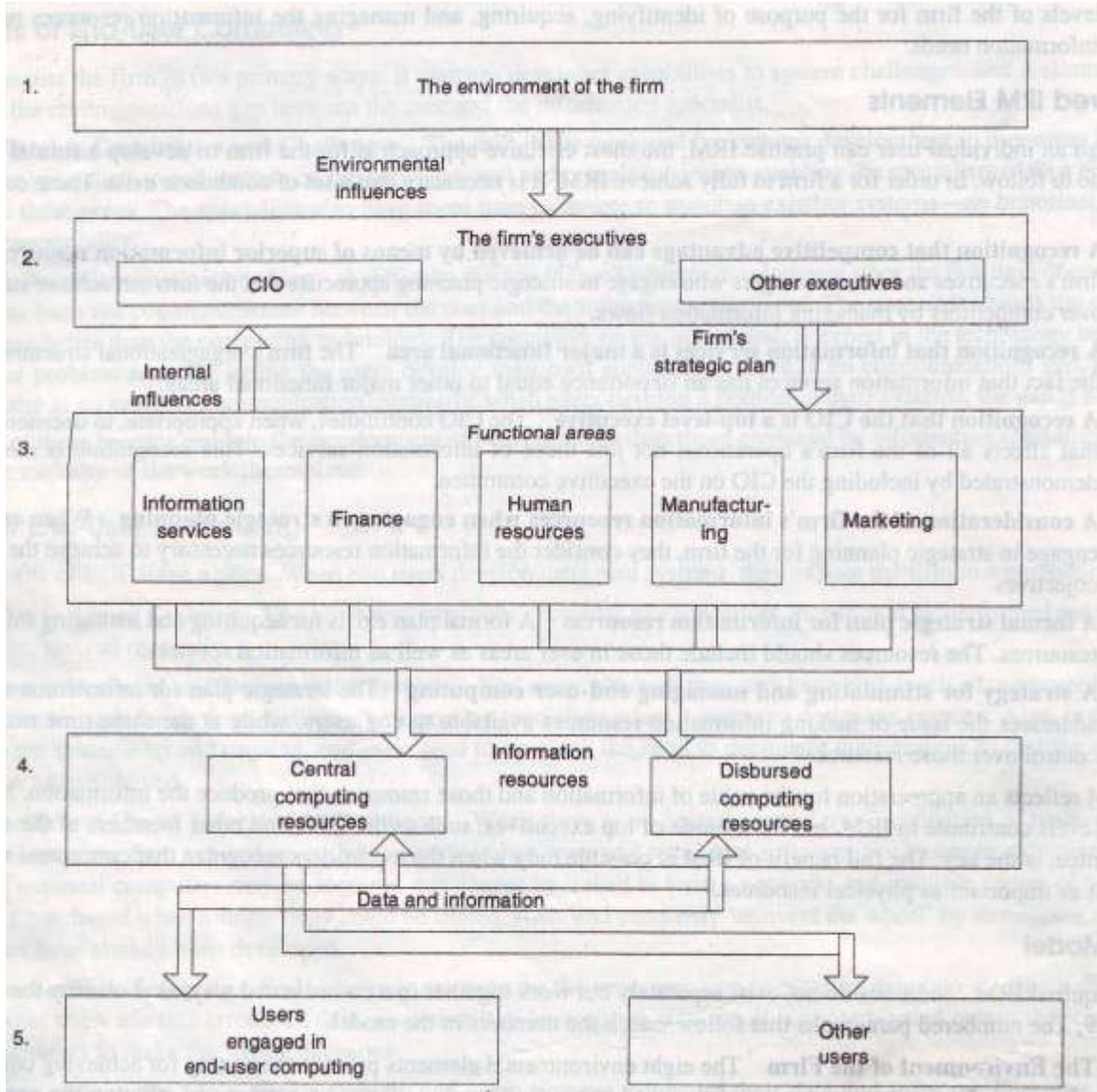
**IRM Model**



**Fig.4.8 The IRM model**

**The IRM model consists of:**

- **The environment of the firm:** the eight environmental elements provide the setting for achieving competitive advantage. Executives are aware of the need to manage resource flows as a means of meeting the needs of the environmental elements in a competitive market.

- **The firm's executives**: the CIO is included among the group of executives who guide the firm towards its objectives. One of the key activities of this group is strategic planning.

- **Functional areas**: An information service is included as a major functional area, and each of these areas jointly develops strategic plans that support the strategic plan of the firm. One of these functional plans is the strategic plans for information resources, which is prepared by information services working with the other functional area.

- **Information resources**: the strategic plan for information resources describes how all information resources will be acquired and managed. Some of these resources are centralized and some are disbursed.

- **Users**: data and information flow between the information resource and the users.