SELECTING A COMPUTER SYSTEM.

When planning to acquire computer equipments, the individual or organization should carefully weigh the merits and demerits of the methods used to finance the equipment. The cash outlay & the returns should be well evaluated with estimates before a decision is taken.

A good computer system must meet all the requirements of the user. Therefore, before selecting the computer system to implement, one must analyse all the requirements necessary in order to avoid acquiring a system that may disappoint the users.

The requirements analysis for selecting a computer system should cover the following:

1. Identify all requirements of the user.
2. Evaluate hardware requirements that will meet the user’s needs.
3. Evaluate software requirements that will meet the user’s needs.

FACTORS TO CONSIDER WHEN SELECTING A COMPUTER SYSTEM.

The various factors to be considered in selecting a computer system are categorized as follows;

(1). Economic factors.
   - Cost comparisons.
   - Acquisition methods.
   - Return on investment.
   
   Note. The cost of the hardware forms a major part of the capital investment. If the computing requirements are not much, it may not be advisable to buy a very costly system.

(2). Hardware factors.
   - Hardware performance, reliability, capacity, and price.
   - Firmness of delivery date.
   - Accessibility of back-up facilities.
   - Presence or absence of modularity.
   - Effective life of the proposed hardware.
   - Compatibility with existing systems.
   
   Note. Before selecting a given system,
   - Check to ensure that the system has sufficient Internal memory, as this affects the speed of operation, ability to expand, and the overall system.
   - The system should be compatible with other systems so that in case the system fails, the work can be executed on a different compatible system.
   - Similarly, it should be possible to enhance the computer capabilities on modular basis as the organization grows.

(3). Software factors.
   - Software performance and price.
   - Firmness of delivery date on the proposed software.
   - Availability of useful and well-documented packaged programs.
   - Ease of use and modification.
   
   Note. For the computer system to succeed, the quality of the software is a very important factor. The availability of Application packages also help a lot.

(4). Service factors.
   - Maintenance terms and quality.
   - Training facilities offered and the quality of training provided.
   - Programming and conversion assistance offered.
   - Facilities provided by the manufacturer for checking new programs.
   
   Note. Service and support service offered by a vendor, e.g. Availability of assistance for programming, training of staff and conversion of data are very crucial for a computer installation. These services can greatly simplify the implementation of a computer system.
(5). Reputation of a manufacturer.
- Financial stability.
- Clean record of keeping promises.

**Note.** The reputation of the manufacturer is an important factor. Newly established companies tend to make false promises. In addition, the financial soundness of the vendor ensures that the company will not shut down in the near future.

**HARDWARE FACTORS.**

Some factors considered when selecting a computer hardware are:

(a). **Processor Speed.**

Every computer has a clock that drives its operation. The **Processor speed** is the speed at which the system clock synchronizes the operations of the CPU & can be measured in **Hertz** or **Megahertz** (1MHz = 1 million cycles per second). The speed can also be measured in **Millions of Instructions per second** (MIPS), where one instruction may be one or more cycles.

The processing power of a computer depends on its **Processor speed & the amount of data it can handle at the same time**.

Computers whose Processors have faster clocks perform operations (or process many instructions) much faster compared to those with slower clocks.

For example, the processing speed of small computers ranges from 3 – 5 MIPS, while the speed of large computers can be 70 – 100 MIPS or more. Supercomputers can process from 200 million up to billions of instructions per second.

Therefore, a good computer must have high processor speed. The higher the speed, the more powerful the processor.

(b). **Memory capacity (amount of Main memory –RAM).**

All computers have some amount of **Random Access Memory (RAM)**. RAM is a section of the Main memory, which is used for holding data & instructions required immediately by CPU to perform a task.

RAM is considered to provide fast access of information & is measured in **Megabytes** (MB). Most microcomputers use **Dynamic RAM** because it is cheap.

For a computer to perform as expected, it must have a very fast processor and a high memory capacity, sufficient to enable it handle large volumes of data & also support many and sophisticated programs, which might require large memory sizes.

Because of the current multimedia driven applications, a good computer should have sufficient memory to handle the heavy applications that require a lot of memory space in order to run. A computer with at least 128 MB of RAM is recommended for most contemporary applications.

RAM is packaged as either **Dual In-line Memory Module (DIMM)** or **Single In-line Memory Module (SIMM)**.

Therefore, before one buys a memory module for the computer, the following factors have to be considered:

1. The type of module supported by the motherboard of the computer.
2. Does the motherboard have an empty memory slot?
3. Will the module work well (be compatible) with the existing modules on the motherboard?
4. What is the capacity of the module?
(c). **Warranty (Service contract/ assurance/ guarantee).**

A Warranty is an agreement between the buyer and the seller that spells out terms and conditions of, after selling a product in case of failure or malfunction.

A Warranty is usually the duration in which your computer is supposed to work without any problem.

The buyer should find out whether the seller is actually ready to provide after sales services. Otherwise, there should be adequate backup support from the manufacturing company.

On top of the actual cost of the item, most manufacturers and suppliers include a certain percentage charge to cover the warranty.

A good warranty should cover the following points:

1. **Scope of cover, such as 6 months, 1 year, etc.**
   
   *Example:*
   
   The computer manufacturer must give a guarantee that the hardware will be free from defects in materials & workmanship under normal use and service for a specified period of time (usually 1 yr) from the date of receipt.

   In case of any software, the software manufacturer must also guarantee that the software accompanying the hardware will perform substantially/ considerably in accordance with the accompanying written materials for a specified period of time (usually 90 days) from the date of receipt.

2. **Callout response and liability agreement.** For example, how long should the supplier take to repair a fault or replace the product, and if he/she delays, who bears the cost.

3. **Preventive maintenance.** For example, regularity of service, at intervals, etc.

(d). **Cost of the system.**

The cost of a computer system depends on:

1. **Its Processing capability.**

2. **Its Size.**

   The cost of a computer is directly related to the size. Portable computers are more expensive than their desktop equivalents, because of the superior technology involved to manufacture smaller components without losing performance abilities.

3. **Whether it is branded or a clone.** Branded computers are more expensive than their equivalent clones. This is because of their reliability and good after sale services.

   The cost of the hardware, i.e. the initial price, the subsequent cost of maintenance & the cost of its Spare parts should be reasonable/ low.

   It is important to do a market survey from Magazines, Newspapers, and electronic media, or visit a number of vendors to compare prices before purchasing a computer. Computer information and technology exhibitions also enlighten a buyer on current trends and costs.

(e). **Upgradeability of the computer.**

The type of the computer purchased should be upgradeable, i.e., it should allow upgrading of the Processor & the Hard disk to make it suit your needs. The RAM memory can also be upgraded/ increased by simply adding new memory modules into the memory slots on your Motherboard.

In addition, the computer you buy should be one that can easily be upgraded to accommodate emergent technologies. For example, some older computers cannot support large hard disks available in the market today, hence difficulty in upgrading them because smaller hard disks are no longer in circulation.
(f). **Compatibility of the system.**

The hardware facilities of the computer should relate well with the different kind of devices available. It must also support Plug-and-Play facilities. This ensures that the computer system operates in a systematic, reliable, & efficient manner as required by the user.

(g). **Portability.**

The size of the computer should be small so as to enhance portability. In other words, it should be sufficiently light & hence easily transportable.

(h). **User needs.**

The computer hardware selected should be able to accommodate the user programs as well as any other device which might be added; both hardware and software.

The hardware selected should be able to meet the unique needs of the user. For example, if the users have special disability like inability to use their hands, consider buying input devices that capture data through voice input.

User needs also determine the type of data that will be processed. Therefore, the type of hardware chosen should be the most appropriate to satisfy the needs. For example, in a Supermarket, a special device called a *Point of Sale (POS) Terminal* is most suitable to record transactions.

(ix). **Popularity of the computer manufacturer.**

The computer must be from a well-known manufacturer. This can only be detected by use of the brand names such as Compaq, Dell, IBM, and Hp.

(x). **Availability of hardware spare parts.**

The computer spare parts, i.e., Input and output devices, should be readily available.

(xi). **Monitor.**

Depending on preference, your choice for a monitor may depend on Size, resolution, and the technology used to make it.

Currently, Flat panel displays have become a new market standard quickly replacing the Cathode Ray Tube (CRT).

(xii). **Multimedia capability.**

*Multimedia* is the combination of video, audio, text, and images to provide an interactive, creative, and effective way of producing and communicating information.

A multimedia system should have *Speakers, CD/DVD drive, Sound card,* and a *SVGA monitor.* It should also have software that supports multimedia capability.
SOFTWARE FACTORS.

Although one may have a good computer with the best hardware, the real determinant of a computer’s value to the user is the software in it that can run to solve the day-to-day data and information processing needs.

The following factors should be considered when selecting software:

(a). **Authenticity of the software.**

   The term **Authenticity** refers to genuineness, validity or legitimacy of an item.

   When acquiring software from the vendor, make sure it is the original copy that is accompanied by the license and certificate of authenticity of the developer.

   You should only use software of the major Software houses.

   In other words, the purchased software should be carefully examined/ tested/ evaluated before use to ascertain that they are authentic/ valid. There should be no copying and dumping of programs.

(b). **Documentation of the programs.**

   **Documentation** refers to the manuals prepared by the developer having details on how to install, use and maintain the software.

   When the software is purchased for use on a particular computer, the purchaser obtains a copy of the program plus a no. of other items of documentation (descriptions). These include; Installation guide, Maintenance guide, User guide, a Reference manual, etc.

   This documentation enables the user to work with the software with minimum guidance.

(c). **User needs (requirements) of the software.**

   The needs of the user determine the type of operating system and application programs that should be purchased.

   The software used on a given computer must be able to solve particular problems or handle the specific needs of the end-user sufficiently. For example, if the user needs to type documents most often, he/she should buy a word processor.

   The user must choose programs that have more facilities to ensure that they fully solve a wide variety his/her problems. For example, people with special disability will require software that recognizes other forms of input like voice and natural sound. A good example is a software used in mobile phones to store voice and allow the user to make a call by just calling a name instead of keying in the number.

(d). **Reliability and security.**

   People are more comfortable with software that offers good security to confidential and private information.

(e). **User friendliness of the software.**

   The software purchased is expected to be “**User-friendly**”. **User-friendliness** is a measure of how easily the user can be able to operate the computer. Therefore, a user-friendly software is one that the end-user finds helpful, easy to learn and easy to use.

   Some programs are more user-friendlier than others.

   **Features/characteristics of User-friendly software.**

   ✤ It should be easy to learn & use and also suit people with little or no computing knowledge.

   ✤ The programs should enable the end-user to perform many of the routine functions & operations such as, manage computer files, diagnose & repair computer problems that enable the computer to run more smoothly & efficiently.
The software should be self-contained, so that the user is not forced into accessing manuals.

The amount of effort & the information required for the user to get the software complete required tasks should be minimal.

The user should be made to feel in control of what is going on.

The software should behave in a logical & consistent manner, enabling the user to reason about what is going on and apply what has been learned.

(f). **Cost of the Software.**

The software purchased should be relatively cheap, and should be able to meet one’s needs.

*Note.* One cannot just buy a program because it is cheap. There are many other factors that may force a person to buy far much more expensive software even with cheaper alternatives available.

In case the off-the-shelf software does not fit the needs of the users, it would be advisable to develop in-house software, even though they may be a bit more expensive.

(g). **Compatibility and System requirements of the software.**

**Software compatibility** refers to the ability of the computer to run depending on the system setup (configuration).

Different programs will be loaded to different types of hardware. For example, some software may only run on a computer that has 32MB or RAM and above. Any computer, whose configuration is lower than this, is said to be incompatible.

Therefore, the programs selected should relate (fit) well with/within the existing computer resources, e.g., hardware facilities and ensure that the computer system operates in a systematic, reliable & efficient manner as intended by the user.

Some software are not compatible (well suited), e.g. Apple Programs. Otherwise, it is important that one reads the installation guide and system requirements that comes with the software in order to avoid disappointment.

(h). **Portability of the software.**

**Portability** refers to whether a program can be copied or installed in more than one computer.

The software should be **Portable,** i.e. it should also be able to run on several different types of computers with very little or no modification (without re-writing the code).

*Note.* Although, most software in the market today are portable, some developers produce software which can be installed on one machine only. This means that, if one has, say 20 computers, he/she should buy a license for each.

(ix). **Standards of the software.**

The software should be standardized, i.e. the version of the program should not be too low or too high.

(x). **Popularity of the software.**

Before buying particular software, its current users should be interviewed to find out whether the software is successful and famous in the market.

**Exercise (a).**

1. Identify and describe 8 hardware and 8 software factors that can be considered when selecting a computer.
2. State and discuss four factors one would consider when purchasing computer software.
3. What hardware issues would one consider when buying a computer?
ACQUISITION (PROCUREMENT) OF A COMPUTER.

Introduction.
Introducing a computer into the business is an act that should be considered with great concern, because it involves capital expenditure, and as such, it should only be done if it is necessary and its acquisition should be in a cost-effective manner.

Before acquiring the computer and its related facilities, one should investigate the effects of introducing the computer into the organization. This is to ensure that adequate returns are expected from such an investment.

Computer costs.
The cost of introducing a computer into the organization depends on Size, Nature & the application requirements of the affected organization.

Small & simple organizations may require less sophisticated computer installations. Big & complex business organizations may require complex configuration and sophisticated related facilities.

The costs for installing a computer system may be classified as;
1. Initial costs.
2. Recurrent costs.

Initial costs.
This is the initial capital expenditure onto the computer facilities when they are being acquired.
These costs depend on the Type, Nature and the Model of the facilities to be acquired.
The costs are influenced by the method used to acquire the computer and its related facilities.
The organization should consider ways or plans of acquiring the following facilities:

<table>
<thead>
<tr>
<th>Facility</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hardware</td>
<td>C.P.U and Peripherals</td>
</tr>
<tr>
<td>Software</td>
<td>System and Application programs</td>
</tr>
<tr>
<td>Storage Media</td>
<td>Tapes, Disks, Cassettes, etc.</td>
</tr>
<tr>
<td>Training</td>
<td>Managers, Analysts, Programmers, Operators, etc.</td>
</tr>
<tr>
<td>Computer room</td>
<td>Construction, Environmental conditions, Equipments, etc.</td>
</tr>
<tr>
<td>Others</td>
<td>Feasibility study, Programming, Changeover costs, etc.</td>
</tr>
</tbody>
</table>

Recurrent costs.
Once the computer facilities have been acquired and the system becomes operational, the operating costs for the computer system have to be met by the organization.

Examples of such costs are:
(i). Depreciation costs – the charges on depreciating machines & other equipments, e.g., Air conditioning facilities.
(ii). Wages of staff, e.g., Analysts, Programmers, Operators, etc.
(iii). Administration expenses, e.g., Telephone bills, Insurance cover, consumable costs, etc.
(iv). Other general expenses, e.g. conducting seminars, on-job training for staff, etc.
FUNCTIONS OF COMPUTERS.
The main functions/purposes of computers are:
1. To control business operations.
2. To provide the required information more effectively and accurately.

USES OF COMPUTERS IN AN ORGANIZATION.
(i). Preparation of Payroll.
A computer can be used to calculate Gross pay, P.A.Y.E (tax on the incomes of employees), Social contributions like N.S.S.F, N.H.I.F, etc and after these deductions, the Net pay of the employees is determined. The computer prepares the payroll giving all relevant details.

(ii). Stock control.
Computers can be used to maintain the records of the stock in respect to goods purchased and sold. The computer keeps information regarding the items purchased, sold, price, stock reference and the re-order level.
When the stock of an item falls to re-order level, the computer will print out a requisition to the Purchasing Department. It can also print out a stock list when required. This stock list can be compared with the physical stock to determine discrepancies/differences.

(iii). Records of Debtors.
The computers can be used to maintain the records of debtors. These records help to ensure that debtors pay in time. Any overdue debtors are pinpointed by the computer.

(iv). Budgetary controls.
Computers are used to prepare the budgets and ensure the proper implementation of these budgets.
The computer can alert the management when the actual performance of the organization varies from the planned programme.

(v). Production control.
Computers are used to control the production level. If due to any interruption, the production is discontinued for a specific time, then re-scheduling of the work becomes essential. In such cases, a computer will help the management to make correct decisions.

Exercise (a).
1. (a). Give four advantages of using a computer in information processing. (4 marks)
   (b). What are the major limitations of a computer?

Exercise (b).
1. Computers have done more harm than good. Discuss using computer terms.
2. What are the merits and demerits of computers in the world today?

Exercise (c).
1. State two economic advantages of a computer.
2. State Four disadvantages of computers.

Exercise (d).
1. Explain the effects of continued computerization in an organization (Advantages & disadvantages of computers).
PROCEDURE OF ACQUIRING A COMPUTER.

Acquisition of a computer requires that a Steering committee be formed. The purpose of the committee is to supervise the computer feasibility study and subsequently monitor the Electronic Data Processing (EDP) operations.

The steering committee is made up of personnel whose departments will be affected by the introduction of the computer into the organization.

The Computer feasibility study, should establish the following:

(i). The need to acquire the computer facilities.
(ii). How to finance the equipments, i.e., the methods of acquiring the equipment needed.
(iii). The implementation of the computer equipments, e.g., user training, change-over, time scales, etc.
(iv). The reaction of the personnel within the Data Processing department, e.g. their resistance to change.

Before the feasibility study, a Preliminary survey is conducted to judge the expected costs and benefits, and the computer workload, so as to determine whether carrying out the feasibility study is necessary and also to specify the objectives of the study.

A detailed investigation of the Work area is carried out, based on the objectives set out from the preliminary survey and a schedule, which takes care of both present & the future application requirements of the EDP system is drawn.

Once the schedule is drawn, Suppliers are asked to give a detailed Quotation. Using the schedule, the supplier should specify the facilities necessary, for example;

- The required hardware & software, and the maintenance offered by the manufacturers.
- The cost estimates, depending on the method to be adopted in financing the facilities.
- Back-up equipments or procedures provided and the capital involved in maintaining such strategies.
- How to adapt to the proposed system to enhance Data processing operations.
- Training advice or seminars offered by the manufacturer.
- Delivery dates, etc.

The replies are evaluated by the Steering committee and the decisions taken are contained in the feasibility study report. The report may contain the following:

(i). The recommended hardware, software and other facilities.
(ii). The method of acquiring the recommended equipments.
(iii). Cost benefits of the recommended equipments against the rejected ones.
(iv). Installation consideration and the expected growth in the workload.
The effects of computerization to the organization.

**Note.** The report is handed to the top management for a decision; either to acquire the facilities of particular model or to take no action.

**METHODS OF ACQUIRING A COMPUTER.**

There are 4 methods of acquiring and/or financing the computer costs.

1. Rental.
2. Purchasing.
3. Leasing.

**Note.** Rental, Purchasing & Leasing methods are used to acquire ‘in-house’ computer equipments, i.e., the computer equipments are installed within the user’s premises.

**Renting a computer.**

The computer facilities are acquired and installed for use within the user’s premises at fixed periodic charges, e.g. monthly charges, payable to the manufacturer.

The agreements have a minimum rental period, such as 90 days. After the minimum period, the user is free to cancel the arrangement with short notice (1-2 months).

**Advantages of rental.**

(i). Tax allowances are available.
(ii). There is no large initial capital expenditure.
(iii). The effects of technological changes is reduced, because during the agreement period, the charges are fixed, hence inflation and maintenance are taken by the manufacturer and obsolete equipments can be returned to him.
(iv). The user has more flexibility to change the equipment configuration. Again, if the user is dissatisfied, he/she is also free to cancel the agreement.

**Disadvantages of rental.**

(i). This method is usually expensive in the long-run, i.e. with time, more computer varieties and related facilities may be in market making the prices to fall, but the rental charges remain fixed.
(ii). The computer & the related facilities remain the assets of the manufacturer & hence, cannot be used by the Renting company (user) as a security, e.g., while seeking loan facilities.
(iii). In breach of the rental agreement, the manufacturer may repossess the computer & the related facilities.
(iv). The renting company usually pays more for any extra work done by the computer & its facilities, which was not covered in the rental agreement.
(v). Productivity of the machine comes down with time, but rental charges remain the same.

**Purchasing a computer.**

The user (i.e. the aspiring company) pays the manufacturer or supplier an amount equivalent to the value of the computer and related facilities.

The payment can be in Cash, through Bank savings, Loan arrangement or Hire purchase agreements.

After all the installments are paid, the computer and the related facilities become full property of the purchasing (buying) company.

**Advantages of purchasing a computer.**

(i). The computer & the related facilities become the assets of the buying company.
(ii). It may be cheaper in the long-run with tax advantages.
(iii). Frequent expenditure is not expected, especially in cases where the manufacturer enters maintenance agreement with the buying company.
(iv). The company can decide to sell the computer and/or related facilities to generate cash, which will depend on the market value of the facility to be sold.
(v). Since the user owns the computer & related facilities, there are no extra charges for additional work done, as in renting.

Disadvantages of purchasing a computer.

(i). Due to advancement in technology, the computer & related facilities may become obsolete in the long-run, hence the organization (buyer) suffers the loss.
(ii). An organization acquires the computer and related facilities in order to carry out its data processing tasks, which keep on changing. A good facility therefore, should be flexible to adapt to the current workload of the organization. Sometimes, the workload might be beyond or much below the computer configuration’s capabilities.
(iii). There is large initial capital outlay, but the returns are usually slow.
(iv). Capital committed in purchasing the computer & related facilities can be spent on other higher returning investments for the organization.
(v). Several other competing investment opportunities would have to be forgone in making the big cash outflow for purchasing the computer. The outflow would also greatly reduce the company’s liquidity.

Leasing a computer.

The leasing company (Lessor) installs the computer & related facilities in the user’s (Lessee’s) premises. The Lessee then pays leasing charges to the lessor, who acquires the computer and related facilities from the manufacturer and meets all the payments of the equipments value.

Note. Leasing contracts are similar to rental contracts, but are usually of longer periods than those of renting.

Advantages of leasing a computer.

(i). Leasing contract charges are lower than the rental charges, and the contract is renewable even at lower rates, unlike rental agreements.
(ii). In leasing, the Lessor does not charge for the extra workload for the computer system.
(iii). It does not require heavy initial investment.
(iv). Lease expenditure is usually a revenue expense, hence it may be charged to the Profit & Loss Account.
(v). Maintenance charges are included in the lease charges.
(vi). Lease charges generally decline after a specified period.

Disadvantages of leasing a computer.

(i). Fixed charges must be met.
(ii). In case the leasing contract is breached, the lessor may repossess the computer & related facilities.
(iii). The computer & related facilities remain the assets of the lessor.
(iv). Maintenance contracts may not be a guarantee after a certain period of time, though the user (lessee) may suffer inflexibility within the lease time, e.g., When the equipments fail to adapt to the functional environments of the organization. Therefore, this aspect must be clarified during the signing of the leasing contract between the lessor and the lessee.

Note. The maintenance contract is usually agreed on by the manufacturer for the leased equipment.

(v). The lessee (user) has no choice over leased facilities, because the lessor acquires such facilities from the manufacturer of his choice.
(vi). The primary period for leasing is usually much longer than the renting period.
Using a Bureau.

A Bureau is an organization that renders computer services to its clients (other companies which depend on such services).

Computer bureau can be a company, manufacturer, or a user, with extra time to hire out. They work with the aim of rendering services to the other companies.

A computer bureau renders a wider cross-section of the processing services to other organizations on either continuously or on demand basis.

Some of the services include:
- System analysis and design.
- Developing computer programs.
- Computer time hire, and do-it-yourself.
- Advice and consultancy.

Advantages of using a Bureau.

(i). The acquiring company may find it beneficial to use a bureau because:
   - It can evaluate the type of computer it is interested in.
   - It can test and develop its programs before the computer is delivered.
   - Its staff will become familiar with the requirements of a computer system.

(ii). The user pays only for the Information Systems development and Data processing services that he needs.

(iii). It does not require a high capital outlay. Therefore, a company that does not have sufficient finance and who cannot justify the installation of an in-house computer on cost-benefit grounds can have computer services availed using a data centre.

(iv). Some computer users find it convenient to employ a bureau to cope with peak loads arising, e.g., from seasonal variation in sales. In addition, if the organization has insufficient volume of work to justify the installation of a computer, it can go for data centre.

(v). A bureau’s computer may be used in the event of a breakdown of an in-house machine.

(vi). Enables the data processing to be done by the people who have the expertise.

(vii). The user can obtain advice on all aspects of Systems development and operation.

(viii). Enables the client to obtain the user up-to-date computer technology, specialized equipment, and programs.

(ix). Sometimes, there are time-sharing vendors who provide for a fee the usage of a central computer & online file storage to users who obtain access through remote terminals and telecommunication lines. Time-sharing vendors also offer a large no. of specialized programs, many of which the user may find applicable and very useful.

(x). It avoids the responsibility of operating an in-house computer, i.e. it eliminates the personnel and management problems caused by the employment of a group of highly paid technical professionals in a rapidly changing and highly technical field of computer.

Disadvantages of using a Bureau.

(i). The users of the bureau services have no control over their jobs once they are submitted to the bureau.

(ii). Periodic audit is necessary, because transportation of data and/or information from the organization to the bureau premises or vice versa, may pose problems, e.g. fraud.

(iii). Control by individual companies is difficult, because processing goes on at a remote location.

(iv). Documentation is strictly adhered to, so as to ease the understanding of the systems, whose developers might not be available during the running of the systems. This is especially in a situation where the bureau develops and implements the systems.
(v). The security of confidential information is at risk.
(vi). In most cases, the cost of using the bureau services may be expensive, especially in the long-run.

Exercise.

1. What are computer costs? Explain main computer costs.
2. Describe the main functions/uses of computers.
3. Explain the advantages and disadvantages of using a computer.
4. Describe the procedure of procurement of a computer.
5. Explain the various methods of procurement of a computer.
6. Describe the advantages and disadvantages of the following methods of procuring the computer:
   (a). Rental.
   (b). Purchasing.
   (c). Leasing.
   (d). Using Bureaux.

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