Computer Centres: A Profile with Problems and Prospects

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A computer centre is a service operational unit that performs production or test jobs on one or more data processing systems, the results of which are to be delivered to the job originators according to a predetermined schedule. In addition, the computer centre performs as advisory functions in programming and in the development of the new processes. A computer centre is commonly referred to as an electronic data processing (EDP) system. Computer centres are even today primarily and centrally operated in order to make the available resources accessible to as many users as possible.

A computer centre is an organisational unit that provides storage and processing capacity of data and implements automated storage data and data processing functions, including all necessary auxiliary services.

The concept of implementation with the aid of a data processing system is to be considered as a significant characteristic and may be compared with an abstract manufacturing process, roughly divided into development and manufacturing. Thus the computer centre fulfils the responsibilities such as precise regulation of production, schedule accuracy, security, confidentiality, competency and cost effective implementation and coordination of tasks. This generally applies to all computer centres. The combination of manufacturing concepts together with the broad spectrum of applications makes the computer centre a service organisation, whether it is internal to an enterprise or operates independently as a service centre. Fundamentally, there are four services provided by a computer centre: i) Machine operation, ii) System programming, iii) Application system development and iv) Data controlling, scheduling and quality controlling.

The opening of computer centres in recent years has even resulted into development of more applications using the computers in business. Now most of the industries have started making use of computers more frequently for commercial applications. In service oriented industries like transportation, health care, banking, communication, etc. the population of computers is more than that of the employees. Organisations are finding additional applications and utility of computers because of their affordable price with more user friendly developments as compared with a main frame or mini computers.
The spate of innovations and inventions in the computer technology during this decade has led to the development of ERP, E-mail, E-commerce, Internet and GUI based software in computer. They are very versatile that they have become indispensable to engineers, scientists, business executives, managers, administrators, industrialists, accountants, teachers and students. They have strengthened man’s powers in numerical computations and information processing and thereby have increased the effectiveness and utility of the organisations.

The area of computer applications are literally numerous. Computers have become an essential factor in man’s everyday life. The discovery and applications through an electronic office or the home computer centres have necessitated the information gathering, processing and utilising data for decision making very quickly.

Objectives of the Study

The present work was undertaken with the prime objective of identifying the various problems of computer centres. Therefore, the following specific objectives were kept in mind while conducting the study of the computer centres—

- To trace the origin, growth, and development of computer centres.
- To study the sectorwise working pattern of computer centres.
- To examine the various problems and their causes of computer centres.
- To explore the motivating factors that lead to the development of computer centres in private, public, and cooperative sectors.
- To evaluate the performance of computer centres.
- To make comparative analysis of computer centres with respect of performance, problems and prospects.
- To suggest ways and means to overcome the problems being faced by the computer centres.

Scope of the Study

Nowadays, computer centres are developed in every sector, namely, Public, Private and Cooperative, in the three forms namely, small-size, medium-size and large-size computer centres. These centres are facing a lot of problems in every day life. There is no standard format or norms to run the computer centres. The literature is very rare while computer centre management and computer technology are changing rapidly.

Hence, the present study has been undertaken to examine the problems being faced by the computer centres and their prospect in the near future. This study is used to identify problems and their causes and provide probable solutions as a new direction in the form of suggestions to the computer centres.

Methodology of the Study

The methodology used for the study is presented below under the title of sample, tools used for the study, procedure of data collected and data analysis.

Sample of the Study

The study was conducted with selected computer centres from the study areas and the data was collected from fifty, out of five hundred and two computer centres operating in three major sectors, namely, public, private and cooperative. These samples were selected on the basis of purposive sampling as well as stratified sampling.

Tools used for the Study

The study is divided into three parts. First part tabulates and interprets the empirical data collected from the selected units. Second part deals with statistical analysis to determine various numerical measure which describe the inherent characteristics of frequency distribution. The various measures carried out are Mean, Standard Deviation, Standard Error, Coefficient of Variation and Range. Third part deals with the testing of hypothesis by chi-square test.

Procedure of Data Collection

A detailed and comprehensive questionnaire was prepared and pre-tested and then suitably amended. The questionnaire was administered by personal visits to the concerned persons in the selected computer centres.

Findings of the Study

- It was observed during the course of research that the computer centres working in study areas are mostly in public, private and cooperative sectors, private sector accounting for nearly 50%.
- It was found that, in public, private and cooperative sectors, computer centres are doing
own organisational data processing work in the 83%, 75% and 86% respectively. Hence the hypothesis is accepted. Therefore, we conclude that the computer centres in majority are doing the data processing work for their own organisation.

- In most of the computer centres (80%) selected as samples, it is found that the computers are used for on-line data processing work. In the computer centres, Local Area Network (LAN) Technology has been implemented. The Servers, Master terminal and Backup units are in the computer rooms and terminals (nodes) are spread out into different departments on the relevant processing tables. Data processing work is done through on-line processing as well as via distributed data processing and database is shared from the main server and the on-line backup devices are connected to the servers.

- In most of the samples selected from computer centres (95%), total investment on hardware is more because there is a serious problem of maintenance of the old machines. The components of old computer machines are not available in the market. Machine suppliers also don't care to repair these machines and further there are no extension facilities for upgradation. The non-workable old machines are treated as scrap in the dead-stock room and then it is preferred to purchase new machines.

- The software industry has a trend of bringing new versions of software in the market with additional facilities such as Visual Basic, Visual FoxPro, Visual C++, JAVA and Oracle (RDBMS) etc. and their selling price also rises higher, and the existing machine configuration is not capable of installing these latest software. Now-a-days investment on software is more than on hardware. So the user selects system software and application software first, and then goes for hardware purchasing.

- In the public and the cooperative sectors, there is no problem of finance for computer centre installation. The maintenance of application software problems faced by these organisations and the ultimate overall performance of these sectors of the computer centres is very low compared to the private sector. In the private sector, investment on hardware is less than the cooperative and the public sectors, and the overall performance of computer centres is good.

- In the private sector, the computer centres appoint full time trained and experienced staffs for software development. As a result, in this sector almost all selected organisations developed software in-house and these softwares fulfil all the requirements and there is no problem of software maintenance because both the source codes of softwares and the developers are available in-house.

- Staff-change is inevitably high, as the individuals in the staff always wish to get higher salary. If they get their expected salaries, they do the given work with interest, in order to stay on in the job for a longer time.

- Many of the computer personnel feel more loyal to the 'profession' of computing than they do to the organisations which employ them. As a result, whatever efforts a company makes to retain its staff, many will leave simply to gain wider experience from different hardware, languages and applications. They also do this to further their long-term career prospects.

- The computer centres do not apply standard protection measures for prevention, detection and recovery. As a result, when suddenly a system breaks down or a system is affected by hazards, a lot of time and efforts for solving these problems are required.

- Some computer centres tackle the maintenance problem by making analysts and programmers (who are currently carrying out development work) are also responsible for maintaining live systems.

- The computer centres are not fully utilised. In the public sector, on an average, 50% computer centres utilise their resources. But in the private sector, on an average, the computer centres in majority (95%) fully utilise their resources. In the cooperative sector, on an average, the computer centres (39%) utilise their resources.

- Most of the computer centres use tailor-made software packages and have paid less attention to software development.

- Majority of the computer centres face at present the problems of rapid changes in Information Technology industry, lack of trained staff, availability and under utilised capacity.
Implications of the Study

Considering the problem areas identified in the study and keeping them in view, it is desired to make the following suggestions for the increase of performance and greater prospects in various sector-wise computer centres. If these suggestions are implemented, they can lead to better performance, which is very essential for not only the survival of any computer centre but also for maintaining its competitive position in the market, especially in these days of globalisation, liberalisation and free economy which are the market buzzwords. With progressive liberalisation in IT industry, the Government intervention controlling the trends of Information Technology will be almost non-existent in the near future.

The suggestions are made so that they can be implemented with existing infrastructure, with a view to improve the performance of the computer centres to a level that could be adequate. The use of state-of-the-art technology to keep pace with the latest in the world of information dissemination is also emphasized.

Establishment: For establishing the computer centre, for getting detailed guide-line about hardware/software and personnel selection, it has been suggested that computer consultants (Advisors) should be appointed at least in the initial stages.

Online Transaction Processing: It is found through this research work that, in the study area most of the computer centres are installed online transaction processing system in place of batch processing system. Data processing work done through online processing as well as distributed data processing and database shared from main server and online backup devices are connected to the server.

Infrastructure: It is suggested that separate room be kept for server and terminals and be spread in different departments on the processing tables, and necessary accessories should be provided for better performance such as uninterrupted power supply (UPS). Sufficient space and sufficient hardware and system software for handling day to day data processing work must also be provided for. Computer centres should be installed on the first floor for avoiding problems of load bearing, water hazards and fire hazards. Computer centres should have the latest input devices like scanner, optical character reader, voice driven and speech synthesizer devices.

Maintenance: Some computer centres tackle the maintenance problem by making analysts and programmers who are currently carrying out developmental work also responsible for maintaining live systems. Maintenance is often seen as uninteresting and routine work and yet, as time passes and more projects become operational, an increasingly high percentage of a computer department's time and effort will have to be spent on maintaining such live systems. This overcomes, to some extent, the boredom problem, because the personnel involved is dealing with a mixed workload.

Second approach is to have a separate maintenance section, staffed by analysts and programmers who specialise in maintaining operational systems. After a new system has been developed and implemented, the manager of the maintenance section takes over responsibility for the system only if the system is sufficiently well documented. This approach will probably lead to a better standard of documentation, and yet scheduling problems will have to be met; how are the maintenance personnel to be kept busy when little maintenance work is required? Whatever approach towards maintenance is adopted, the ramifications in the area of changes in labour require planning.

Finance: For financial management of the computer centres, it is suggested that a cost and benefit analysis is prepared and accordingly search for ways of getting finance. In the public and in the cooperative sectors, computer centres get finance from their parent organisations. In the private sector, the computer centre installed by a business organisation with its own finance (for own organisational data processing work) and some other computer centres are installed for customer data processing work. Such computer centres should approach banks and financial institutes for their capital.

Staff Turnover: For controlling the change in staff problem, the following suggestions are put forward.

- Encourage the existing staff by motivating with attractive incentives.
- Maintain healthy environment, mental and physical, in the work area.
- Provide facility for upgrading personnel efficiency by reorientation and refresher courses.
- Assign the job to the staff by spotting their inherent efficiency and interest.
• Try to keep the staff by paying remuneration which meet their expectations.
• Revise policies of staff welfare relevant to the current times.

**Under-utilisation**: One sincere suggestion is that, proper scheduling of day-to-day work is a sure solution for full utilisation of the resources. Therefore, it is necessary to prepare well in advance, the intensive and extensive plan of resource utilisation.

**Returns on Investment**: It is strongly recommended that, particularly in private sector computer centres, the issue of proper returns on investments is of prime importance. Being a key factor in making repayment of loans, these computer centres should work with optimum utilisation of the investments made.

**Job Satisfaction**: It is suggested that a person must be explored about his ability and efficiency, and then only his job should be assigned. The person should feel that his job is challenging and interesting. He must feel assured that his job will pave way for his bright career. Such placement of personnel is beneficial with respect to all the jobs of the computer centres.

**Updation of Knowledge**: The technical nature of the work of the practitioners of computer may rapidly become out-of-date. This means that, time and effort must be spent on keeping knowledge up-to-date, using appropriate training methods. This will affect the costs and the time scales required for computer work.

**High Salary Expectations**: It is obvious that the analyst and the programmer who are experienced computer professionals are scarce and naturally they demand higher salary. In such a seller’s market, labour turnover is inevitably high. This means that higher salaries have to be paid to computer personnel, and that they have to be given interesting work, in order that they will stay in one job for a longer time.

**Loyalty to the Profession**: Many computer personnel feel more loyal to the ‘profession’ of computing than they do to the organisations which employs them. This may lead to conflicts of interest and severe motivation problems among such staff, who may give rise to rebellion against strict standards in such areas as documentation. In any case, whatever efforts a company makes to retain its staff, many will leave simply to gain wider experience from different hardware, languages and applications. They feel that they further their long-term career prospects. It is recommended that, to meet this situation of competition, more and more incentives for each job should be thought of carefully and brought into force from time to time.

**Promotion Problem**: As few experienced people are available, the vacancies within are filled as and when they occur, the trend of promoting the best programmer in a higher vacant position in system analysis, or the best analyst to a higher management role, should be resisted. A careful analysis of the characteristics required by a person capable of filling the vacant job must first be made. It is of little use promoting a member of staff to a higher position of his/her of competence.

**Security Measures**: It is suggested that, for every business organisation’s computer centre, to develop adequate security measures for minimising the impact of threats. The computer equipment can be protected from physical hazards in the same manner as the other assets of the company. The more serious threats are from people from inside or outside gaining unauthorised access to equipment, programs or data, and unauthorised use by them, of equipment or of confidential information, errors, omissions, deliberate or accidental alteration, theft, destruction as well as divulgence of data and programs for personal gain.

**Protection from Viruses**: It is necessary to make the computer centre as much immune to the viruses as possible. So, the researcher wishes to give the following suggestions:

• Install virus guard on every machine and updating should made in the virus guard frequently.
• Control the temptation of using the outsider storage media (disks).
• Keep server away from Internet connection.
• Don’t down load software and information from Internet.
• Don’t down load E-mail directly through Internet connection.
• For use of internet keep separate computer without connecting of the data processing computer system.
• Frequently scan the diskettes by latest virus vaccine.
Computer Abuse: Large number of computer abuses (about 50%) are due to data entry and operational errors and omissions. These arise from incompetence, lack of training, lack of motivation, carelessness and the like. Generally, factors contributing to theft or divulgence for personal gain or international acts of destruction can be attributed to negative feelings like frustration and disgruntledness, mental instability and improper screening of employees at the time of employment. Most of the computer criminals are nontechnical people. Here, it is strongly suggested that, unauthorised non-technical persons should be kept away from interfering with the technical work of the computer centre.

Protection Measures: Findings and hence suggestions which flow from this study are as under:

There are three types of protection measures used in computer centres; namely, prevention, detection and recovery. The more important steps are:

Backup: An effective safeguard is to have a backup for hardware and software. As regards hardware, standby may be kept and for software and data apply Grandfather-Father-Son technique for batch processing systems and mirroring or backup server for online transaction processing systems.

Prevention of unauthorised access to computer centres:

The more commonly used techniques are:

i. Providing logging (login) and password to each individual user for gaining access to the computer.

ii. Most of the present day operating systems have the capacity of keeping records of all attempts to logging in the system and all the resources used. In addition to the ID-number procedure, it is also possible to restrict the use of system resources for specific activities like write, read, add, change, delete, copy, create, append, display etc. with the help of proper coding system.

By Sampling Files at Random: It can be ensured that computer resources are being used for the legitimate business of the organisation.

Encryption: The safest way to have reasonable assurance that transmitted data has not been read, copied or tampered with, is to use cryptography. This means that data is enciphered before it is transmitted and deciphered after transmission.

Personnel Safeguards: It includes to arrange separate duties of each person so that one person cannot sabotage the organisation's computer system. Careful screening procedures should be observed while hiring computer personnel.

Contingency Planning: A computer centre must develop a contingency plan to provide guidance for immediate control for more probable contingencies and backup arrangements for use during interim operation.

Suggestions:

• Training camps should be arranged for the varied staff.

• Computer centre and all its components should be updated from time to time.

• Computer centres should be utilised to their maximum capacity.

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