Use of Computer Technology in Research

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Abstract- Due to the infinite capabilities of the computer, it can be called a miracle. As a result of the development of fast working electronic digital computers and their use in various fields, a new revolution has been initiated in all the fields of knowledge and science. Due to computers, there has been a very significant and meaningful change in the thinking, working style and effectiveness of humans. Research work done in various fields is also not untouched by the influence of computers. The use of computers has affected not only the research work done in the field of physical sciences but also in the field of social sciences. The availability of computer facilities has had a special impact on two most important dimensions of research work in social and behavioral sciences. First, computers have made the preparation and presentation of research reports more simple and form. Second, computers have made the work of analysis easier and accurate. In fact, as a result of computers working at very fast speed, there has been significant development in the field of data storage, processing and analysis. As a result of computers, the problem of complexity of statistical calculation tasks has ended. Computers have made it possible to do calculation work of years in months, calculation work of months in days, calculation work of days in minutes and calculation work of minutes in seconds. Many such research works, which were not possible earlier due to the complex complexity of calculations used in data analysis and excessive time-consumption, can be easily done today due to the availability of fast calculation facility on computers. The use of computers in research is increasing day by day. Its use in research is increasing day by day due to many reasons. Firstly, all those big calculations can be done easily and quickly in a computer today which was either never possible earlier or there was a possibility of some error if done by the human brain. Therefore, first of all, because of the ease with which the computer can calculate quantitative facts, it is used in research. The second advantage is

that the computer can absorb a lot of quantitative or explanatory facts without demanding much space and presents them in the blink of an eye. It becomes very easy to send facts because they can be easily taken out as a second copy by the computer.

Key-words- Computer, Research, internet, Memory, Messages, C.P.U.

Introduction- A computer is a multipurpose machine which processes vague facts as per the instructions inserted in it. A computer as a machine and all its components are just hardware. A personal computer is considered to be a small electronic data machine for personal use. The instructions which tell the computer what to do are called software. The instructions given in the program direct the computer to process the inputs, process the data and display the results. The following are the main definitions of a computer system:

According to Henry A. Ford, 'Computer is a device made up of a combination of electrical and mechanical components which contains many instructions. To solve a problem, the computer receives the required data from the user. It works on those data by following the instructions related to the problem in a predetermined order and presents the obtained result to the user by converting it into a suitable format.

According to William Edgar Jones, 'Computer is a device made of a combination of electrical and mechanical components which receives data from the user. It processes those data in a pre-determined format and provides the desired result to the user.'

It is clear from the above definitions that a computer does not have a brain of its own. It cannot do any work on its own. For its operation or to get any work done from it, suitable instructions are provided to it by following which it can complete any work.

Characteristics Of Computer System-

Computer is entering every sphere of human life today due to its excellent and unique features. Its main features are as follows-

1. Speed- Computer can be called a high speed calculator by which impossible scientific calculations can be done in a few seconds. All the work that can be done by a computer is based on calculations only. Today the use of computer is increasing in the field of army, science and education. Computer is an electronic device. Today's computers calculate at a very fast speed.

2. Memory- All the messages can be collected and kept safe for a long time in the memory of the computer, which is very large. The unit of memory used in electronic computers is kilobyte. There are 1024 memory blocks in one kilobyte. It is very difficult to store all the messages in the internal memory of the computer, so external memory is used for this. Any number of messages can be stored in the external memory, and they can be used anytime. The computer system provides an important facility of recall. By this facility any information can be displayed again on the computer screen. This facility is operated by the secondary memory of the computer. The recalled information is as correct as it is when that information is obtained for the first time.

3. Feelingless - There is no feeling or any understanding in the computer system. Because the computer is a machine. The computer can never take any decision on

its own, the result by the computer depends on the instructions of the user.

4. Accuracy- Computer has a high capability to present correct results. Most of the errors presented by the computer are due to the mistakes made by the user and faults in the computer hardware, no other reason is possible for this. Computer has a higher capability to correct errors than other devices.

5. Automation- Once the program is loaded into the computer's memory, each message of the program is executed by the Central Processing Unit. This execution by the Central Processing Unit continues until the program ends i.e. 'the program ends'.

6. Delivery- If the computer is used in a proper environment, it can work with great efficiency. Since the computer is an electronic device, there is no sign of fatigue even if there is a heavy workload. There are no signs of malfunction even if there is a heavy workload, but many mechanical devices start showing signs of fatigue or malfunction when the workload is high. If a human is asked to work continuously, after some time the human brain also starts feeling tired, and due to this he loses balance and starts making mistakes.

7. Reliability- The computer can work continuously and continuously provides correct calculations and information to the user. In this way, the reliability of any work increases by using a computer.

Use of Computer Technology in Research-

In short, a computer is a device that receives and stores information and, when required, displays it in the form of digits, words or pictures. A computer can be a digital or analog device. A digital computer will necessarily express information in words or symbols, while an analog computer will express information in terms of its measurement. Thus, analog computers are mostly used for engineering and scientific work, but mostly digital computers are used, so the word computer is often given the name 'digital computer'. There has been a significant progress in computer technology in the last four decades. The present-day computers are much cheaper and more technically advanced than the first electrified computers.

The growth of computer technology is known as the growth from generation to generation. Today we are in the fourth generation of computers and are preparing to enter the fifth generation. The first generation began with the invention of the computer in 1945. Its C.P.W. It had 18000 small bottle-like valves. It did not have the facility to store programs and to insert new programs, the switches had to be changed again. Gradually, after the changes and technological development in the computer, today the computer has reached a very developed stage and its systems are changing very fast.

Structure of computer (working system)

The internal structure of computer can be understood from the picture given below-
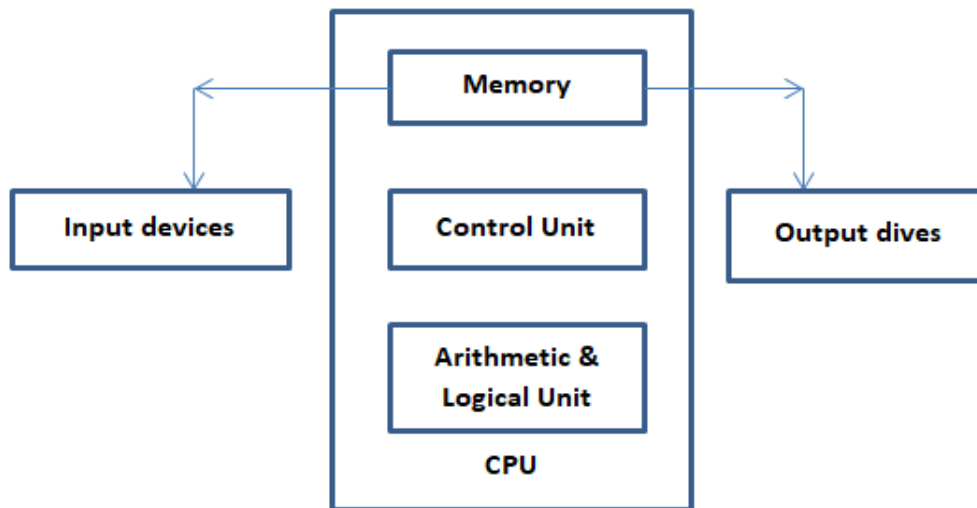
Internal Structure of Computer-

Researchers are making their research work simple, easy, deep, detailed and quick by using computers extensively at various stages of research. With the help of computers, not only the collection, storage, analysis, presentation and transmission of data is being done quickly, easily, error-free and efficiently, but computers are also being used in a very important and meaningful way in other areas of research such as problem selection, hypothesis formulation, design determination, presentation of research report etc. The use of computers in research in social and behavioral sciences can be divided into the following five main areas - (i) Survey of Internet Literature (ii) Scoring and Tabulation of Data (iii) Storage and Analysis of Data (iv) Presentation of Research Work (v) Communication of Research Work.

There is a lot of convenience in sending facts because they can be easily taken out as a second copy by computer. Since research work in social sciences depends on collecting and obtaining as many facts as possible, the usefulness of computer in this work cannot be denied. Every research work does not only involve the work of quantitative facts but also classification, analysis, interpretation and many other tasks of these facts, but it is not that only quantitative facts can be measured by computer, rather computer can do all the other tasks with equal efficiency. Computer is capable of finding many new meanings of a word. It can check large details related to research in a few moments and present its results to the researcher. Research does not only include description and analysis of facts but it also includes many industrial maps, charts, texts, lists, presenting references in order, index, finding some new facts etc. Computer can be used and is used for all these tasks. With these tasks being completed conveniently, the researcher can focus his attention on the research topic and can carry out the task in a better manner. Especially in those types of research that require data to be displayed in maps and other ways or data to be displayed in these maps. The computer can easily display the data by making such maps. A large part of the time that the researcher would have spent in this task is saved.

Economics and Computers- In any research in economics, making models of

the results of economics is the most difficult task. These models change the thinking of every economist, but still model making is an integral part of economics. After the Second World War, to implement new development plans, it was necessary to collect all the data of old development and analyze and interpret them and make new policies according to them, but the old methods could not be used to collect such huge data, so new methods were created, but their actual use was doubtful. To measure this, various experiments were done which were very beneficial and gave results. This helped in implementing the use of computers on a large scale. The simultaneous input of large scale facts by the computer and their simultaneous analysis was proving to be very beneficial. In many countries including India, the input-output analysis technique of computers was taken advantage of. If this analysis was done by a person, it would have taken many years of time and hard work of many people which would have been very expensive, but computers have made this work very easy and thus computers have gained a lot of popularity in economics.

Political Science and Research- Mathematical and statistical methods have made their place in the field of political science. Game method and factionalism method have established their deep hold in political science. Analysis of electoral facts, influence of other insiders on elections and use of sociometric method are many examples. The use of game method is quite difficult and this has encouraged the use of computers.

History and Research- Collecting all the old facts and studying them sequentially, classifying and analyzing them is not an easy task, therefore statistical and mathematical methods were used in history also, but the invention of computers solved many problems and today computers are used in history also.

Social Science and Computer- No subject, be it sociology, education or any other, has been deprived of the computer revolution. Computers are being used in the research work of every social science. When certain techniques are used in one subject and success is also achieved in it, then efforts are made to use them in other subjects also so that good results can be obtained. This also happens because different researchers keep talking to each other about this. No one can say that when computers are being used in the field of psychology and anthropology, then computers will not be used in research work in a similar subject like sociology. This is not possible and for this reason computers are being used on a very large scale in research in sociology too.

Factors Determining the use of Computer- The use of computer in any subject or field mainly depends on four factors-

1. If any user has his own computer, he can carry out his work in a better manner.

2. The work is not completed just by having a personal computer, but it can be used properly only when there is complete information about it. Which software will be used for which work in which computer, where will it be available and how will it be used. Similarly, there should be complete information about the hardware so that the researcher can think about working on the computer.

3. The third important issue is that the researcher must have knowledge of all the methods and working systems that are used in his field of work.

Today the only need is that those who want to use it should be made aware of the capabilities of the computer and the software used in it so that they can solve

their problems easily. Although computers have proved their worth in most institutions and social scientists are continuously using them to complete their research work, but there are still many institutions where computers are not used that much. Those institutions have not yet understood its usefulness in their respective social sciences. Everyone believes that with the passage of time, it will be used on a large scale in all social sciences. There will hardly be any person who will not want that his work is completed quickly, tastefully and easily and there should be no scope for any kind of error in that work. Therefore, in the coming times, the use of computers will increase day by day. So far we have seen what are the factors that determine the use of computers, that is, what are the factors by which it can be said whether a person can use a computer or not. But if it is decided that that person or that institution can use computer in its research work then it is necessary for it to know the following things otherwise it will not be able to run its research work smoothly-

1. Organization and coding of facts- For the smooth running of any study work, it is necessary that the facts are collected correctly, but only proper collection of facts is not enough, rather there is also a need to collect and organize the scattered facts because collecting scattered facts in the computer is not an easy task. After collecting the facts, the next step is to code them. If the researcher does not know how to code them correctly, then he cannot get any benefit from working on the computer. If the facts are correctly coded (categorized) and fed into the computer, then the correct analysis will come out.

2. Storage of facts in the computer- Unless the facts are properly stored in the computer, clarification of facts is not possible in any way, but not every person can collect facts appropriately. If he does not know how to operate the computer properly, then it is important that the person himself is competent enough to store the facts in the computer so that he can get the desired results.

3. Use of appropriate statistical techniques- If the researcher analyzes the facts using appropriate statistical techniques, then he will get good results, but for this it is necessary that he has complete knowledge of all statistical techniques, otherwise by adopting any statistical method the researcher will not get the results and it is possible that he may not be successful in achieving his objective.

4. Use of appropriate software- Today, different types of software are being developed by different companies in the market which can be used for different types of work. But the most important thing is that the researcher should have complete information about the appropriate software, which software would be more appropriate to use for his research, so that appropriate results can be obtained.

5. Operating the computer program- Today, different types of software are being developed by different companies in the market, but it is neither possible nor easy to buy software for every work and use it. There are two reasons for this - firstly, it is very expensive financially because separate software will have to be purchased for every work which will put a lot of burden on the budget. Secondly, it is not necessary for the researcher to know about every software. If the researcher does not know about any software that can complete his research work, then he will have to stop the work midway.

Therefore, it is necessary that the researcher himself makes programs for his work and operates them himself. This is neither very expensive nor very time

consuming. In this way, the researcher can save money and time and bring the research in the right direction, and also appropriate conclusions can be drawn from the facts. The computer does the work easily and quickly, but along with its usefulness, it should also be kept in mind that ultimately it is a mechanical device. It cannot work by thinking something with its own mind, rather it is always operated by the human brain. Therefore, it should be kept in mind that the human brain was, is and will always be supreme. No machine can challenge the human brain, be it a computer or any other mechanical device.

Use of Internet in Research- When a researcher starts a new research work, it is better for him to study the researches done earlier and he can get benefit from their results. The researcher can use those techniques in his research work by studying their techniques from those earlier researches. If the researcher studies every research report, then it will prove to be very time consuming and he will get information of a narrow place only, but Internet is such a program which can make him study the earlier researches of the whole world in a very short time. By sitting on the Internet, the researcher can see all those research programs of the whole world which have been organized in relation to that subject. The entire research program can be studied by looking at it closely on the computer. Similarly, the books of many libraries of the world which have been uploaded on the Internet can also be studied. If different researches are being done on the same subject anywhere in the world, then different researchers can talk to each other on the internet about it. In this way, that research will be global and more clear. By reaching those specific subjects through search engines on the internet, studying about them, those facts can be used in research. If a researcher is doubtful about the subject, then he can email the person doing research on his own subject at a very low cost. In this way, if we count the benefits of internet in research, then it is quite high. If we actually mention its benefits in one word or sentence, then it can be said that internet is like filling the ocean in a pot, that is, internet is a deep ocean of information in which information has been collected in a very small form.

Conclusion-

In conclusion, the use of computer technology in research has revolutionized the way we approach scientific inquiry across various disciplines. By harnessing the power of computers, researchers are able to process vast amounts of data, simulate complex systems, and analyze information with unprecedented speed and accuracy. This has led to significant advancements in fields such as medicine, engineering, environmental science, and beyond. Moreover, computer technology has democratized access to research tools and resources, enabling collaboration and knowledge sharing on a global scale. Researchers can now collaborate remotely, access databases and libraries from anywhere in the world, and leverage powerful computational tools to conduct experiments and analyses.

However, it's important to acknowledge that the widespread adoption of computer technology in research also poses challenges such as data security, privacy concerns, and the need for continuous updates and maintenance of software and hardware infrastructure. Despite these challenges, the benefits of integrating computer technology into research are undeniable. As technology continues to evolve, researchers can expect even more sophisticated tools and methodologies to further enhance the scientific discovery process, ultimately driving innovation and progress

for the betterment of society.

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