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Information Technology, Its Impact on Society and Its Future

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Abstract As we are aware of Information Technology had its modern existence from late sixties of the last century when the Arpanet was introduced, funded by the department of defence of USA. After that the IT industry has come a long way to its current shape where it is playing a very dominant role in our every sphere of life. It has made revolutionary changes in information gathering and dissemination as well as in global communication. It is creating a virtually paperless work environment. Also we can now send a message very easily to anywhere in the world in seconds. From education point of view we can have a virtual class where the instructor could sit in any part of the world and his students scattered in all different parts of the world through video conference with presentation of study materials as well as question and answer sessions. A doctor now sitting in any part of the world could perform a surgery where the patient is lying in another part of the world. These simple examples show where we stand today compared to what it was half a century back. But as we know nothing in this world is purely good as everything has a dark side. In this paper we would discuss the merits and demerits of implementing IT globally and where we are heading to in future.

Keywords Information technology, Impact, Society, Future

1. Introduction

The first definition is of "information technology". Information technology is the technology used to store, manipulate, distribute or create information. The type of information or data is not important to this definition. The technology is any mechanism capable of processing this data [1]. As it is widely known to perform a calculation of any type manually is very cumbersome and time consuming. But if we could develop efficient programs written in many languages and get them thoroughly tested for every function it is expected to perform before putting to use could save lot of efforts and time. Also the chance of human errors that could occur when things are done manually could also be avoided provided the programs are developed keeping in mind the exact requirements that are sought after and developed properly to address the issues correctly without problems. Information technology works based on these simple concepts. As we know it's applications in our lives is extremely wide ranging from simple addition, subtraction to flying an aircraft though autopilot and controlling a spaceship which has landed in Mars from the ground of the earth. Electronic databases now can store huge volume of data which can be used very easily and internet can be

accessed for any information on any field of activities.

Section one gives an introduction of the area. Section two presents the analyses of works done in the field. Section three presents the impacts of Information Technology on society so far and where it is heading to in future. We put our concluding remarks in section four.

2. Analyses of Works Done

The influence of information technology on religious practices has mainly been to the effect of making information about them more accessible. The most relevant question though is whether the developments in information technologies have influenced the continuity of social attitudes, customs or institutions.

Social attitudes have changed with the effect that citizens of a society now expect the various elements of that society to be better informed than previously. They also expect to be able to access more information about a specific product, service or organisation so that they can make informed decisions with regard to their interactions with that entity [1].

The "government" of a nation will be comprised of many varied institutions. However developments in information technology have helped governments to improve their "service" to their citizens. Advances in Database technology for example have enabled the governments of various countries to collate and monitor statistical information that they can use to combat fraud and manage the economy in a more informed way [1].

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Information Technology also has a major impact on the defence capabilities of governments. This covers both a government's capability to wage war and their intelligence gathering capability. Advances in weapons technology and weapons design have increased the effectiveness of various governments' armed forces [1].

Information Technology has also had a major impact on a government's intelligence agencies. Encryption of sensitive information has enabled governments to obtain added security. However attempting to decrypt information is also a major area of work for those employed by the government [1].

The advances in information technology have heavily influenced commercial businesses in several ways. The most important role of information technology in a commercial business, however, is to provide a commercial advantage. Advances such as computer aided design, relational database technologies, spreadsheets, and word processing software all provide a commercial benefit to the business, as does automation of manufacturing processes [1].

The use of information technology to monitor a business performance can also enable the business to highlight areas where they are not making the most use of their resources. The use of information technologies can also increase the businesses income through advertising in the various available forums [1].

Developments such as the Internet and satellite television have created new media and audiences through which and to which News & Media organisations can disseminate their information [1].

An infrastructure of computing and communication technology, providing 24-hour access at low cost to almost any kind of price and product information desired by buyers, will reduce the information barriers to efficient market operation. This infrastructure might also provide the means for effecting real-time transactions and make intermediaries such as sales clerks, stock brokers and travel agents, whose function is to provide an essential information link between buyers and sellers redundant [2]. The information technologies have facilitated the evolution of enhanced mail order retailing, in which goods can be ordered quickly by using telephones or computer networks and then dispatched by suppliers through integrated transport companies that rely extensively on computers and communication technologies to control their operations [2].

The impact of information technology on the firms' cost structure can be best illustrated on the electronic commerce example. The key areas of cost reduction when carrying out a sale via electronic commerce rather than in a traditional store involve physical establishment, order placement and execution, customer support, staffing, inventory carrying, and distribution. Although setting up and maintaining an e-commerce web site might be expensive, it is certainly less expensive to maintain such a storefront than a physical one because it is always open, can be accessed by millions around the globe, and has few variable costs, so that it can

scale up to meet the demand. By maintaining one 'store' instead of several, duplicate inventory costs are eliminated [2]

Computers and communication technologies allow individuals to communicate with one another in ways complementary to traditional face-to-face, telephonic, and written modes. They enable collaborative work involving distributed communities of actors who seldom, if ever, meet physically. These technologies utilize communication infrastructures that are both global and always up, thus enabling 24-hour activity and asynchronous as well as synchronous interactions among individuals, groups, and organizations [2].

By reducing the fixed cost of employment, widespread telecommuting should make it easier for individuals to work on flexible schedules, to work part time, to share jobs, or to hold two or more jobs simultaneously. Since changing employers would not necessarily require changing one's place of residence, telecommuting should increase job mobility and speed career advancement. This increased flexibility might also reduce job stress and increase job satisfaction [2].

The rapid increase in computing and communications power has raised considerable concern about privacy both in the public and private sector. Decreases in the cost of data storage and information processing make it likely that it will become practicable for both government and private data-mining enterprises to collect detailed dossiers on all citizens. Nobody knows who currently collects data about individuals, how this data is used and shared or how this data might be misused. These concerns lower the consumers' trust in online institutions and communication and, thus, inhibit the development of electronic commerce. A technological approach to protecting privacy might by cryptography although it might be claimed that cryptography presents a serious barrier to criminal investigations [2].

It is popular wisdom that people today suffer information overload. A lot of the information available on the Internet is incomplete and even incorrect. People spend more and more of their time absorbing irrelevant information just because it is available and they think they should know about it. Therefore, it must be studied how people assign credibility to the information they collect in order to invent and develop new credibility systems to help consumers to manage the information overloads [2].

Technological progress inevitably creates dependence on technology. Indeed the creation of vital infrastructure ensures dependence on that infrastructure. As surely as the world is now dependent on its transport, telephone, and other infrastructures, it will be dependent on the emerging information infrastructure. Dependence on technology can bring risks. Failures in the technological infrastructure can cause the collapse of economic and social functionality. Blackouts of long-distance telephone service, credit data systems, electronic funds transfer systems, and other such vital communications and information processing services

would undoubtedly cause widespread economic disruption. However, it is probably impossible to avoid technological dependence. Therefore, what must be considered is the exposure brought from dependence on technologies with a recognizable probability of failure, no workable substitute at hand, and high costs as a result of failure [2].

Increasing representation of a wide variety of content in digital form results in easier and cheaper duplication and distribution of information. This has a mixed effect on the provision of content. On the one hand, content can be distributed at a lower unit cost. On the other hand, distribution of content outside of channels that respect intellectual property rights can reduce the incentives of creators and distributors to produce and make content available in the first place. Information technology raises a host of questions about intellectual property protection and new tools and regulations have to be developed in order to solve this problem [2].

There are a lot of positive things to do with social communication for example you can communicate with people at the other end of the world there is no limit to how far you can communicate as long as there is another person who is able to reply to your email / Facebook comments. You can meet a lot more friends over the social network and can arrange to meet new people [3].

The internet is a wonderful thing when it comes to searching for information. People who would like to learn new things can do this via the internet you don't need to read paragraphs and paragraphs of information you can just get the answer you need by a click of a mouse [3].

Improved communication using email, social networking - This is a good way to communicate. People use the web to send emails to people at other ends of the world. They do this because it is a cheap and easy and quick way to communicate [3].

This is a bad thing because you do not know who you are talking to and if you arrange to meet this person they might not be who you think they are and this is a big danger and can hurt people a lot [3].

More chance of bullying. Cyber stalking- This is quite possibly one of the worst things that happens on the internet. These things happen every day and can lead to all sorts of things like people hurting other people, people threaten other people or even people getting depressed because of it and going and hurting themselves [3].

More information available - This is one great thing about the internet that you can find all the information in the world on it. This can help you in all your work. You can find out anything what is going on. Quicker access to information for coursework- The internet is a great place to research information for the topic that you are doing. You can find all sorts of facts and opinions in seconds [3].

Investments to increase the level of explicit coordination with outside agents have generally resulted in increased risk to the firm; firms have traditionally avoided this increased risk by becoming vertically integrated or by under investing

in coordination. This paper argues that information technology (IT) has the ability to lower coordination cost without increasing the associated transactions risk, leading to more outsourcing and less vertically integrated firms. Lower relationship-specificity of IT investments and a better monitoring capability imply that firms can more safely invest in information technology for inter firm coordination than in traditional investments for explicit coordination such as co-located facilities or specialized human resources; firms are therefore more likely to coordinate with suppliers without requiring ownership to reduce their risk. This enables them to benefit from production economies of large specialized suppliers. Moreover, rapid reduction in the cost of IT and reduction in the transactions risk of explicit coordination makes possible substantially more use of explicit coordination with suppliers. The resulting transaction economies of scale, learning curve effects, and other factors favour a move toward long-term relationships with a smaller set of suppliers [4].

The society in the developed countries will be divided into two major groups: On the one hand, there will be technophile people, who embrace the new possibilities which Information Technology offers to their lives. On the other hand, there will be technophobic people, who will obstruct the inroads of Information Technology into their daily lives. Contrary to what most people would think, this part of the population will not only consist of ecologists, but also of conservative people who see technology as something unnatural for humanity, people who don't immediately profit from technological progress such as the rural population and people who are simply overwhelmed by the new technologies and cannot keep up with the pace anymore. This group of technophobic people has a potential to grow temporarily to at most 25% of the total population [5].

The definition of society for the 75% of the population who will embrace Information Technology will change radically. What makes a society today will not be of much importance in the future. People would these days agree that a society is defined mostly by location, language, culture, political system, shared customs, standard of living and common history. Most of these things will fade in importance, instead other things will be much more important, namely personal preferences and interests. Due to the new technical possibilities, societies will look different and consist of different kind of people [5].

POSITIVE IMPACTS OF ICT ON PEOPLE

Access to information: Possibly the greatest effect of ICT on individuals is the huge increase in access to information and services that has accompanied the growth of the Internet. Some of the positive aspects of this increased access are better, and often cheaper, communications, such as VoIP phone and Instant Messaging. In addition, the use of ICT to access information has brought new opportunities for leisure and entertainment, the facility to make contacts and form relationships with people around the world, and the ability to

obtain goods and services from a wider range of suppliers.

Improved access to education, e.g. distance learning and on-line tutorials. There are new ways of learning, e.g. interactive multi-media and virtual reality. There are new job opportunities, e.g. flexible and mobile working, virtual offices and jobs in the communications industry.

New tools, new opportunities: The second big effect of ICT is that it gives access to new tools that did not previously exist. A lot of these are tied into the access to information mentioned above, but there are many examples of stand-alone ICT systems as well:

- a) ICT can be used for processes that had previously been out of the reach of most individuals, e.g. photography, where digital cameras, photo-editing software and high quality printers have enabled people to produce results that would have previously required a photographic studio.
- b) ICT can be used to help people overcome disabilities e.g. screen magnification or screen reading software enabling partially sighted or blind people to work with ordinary text rather than Braille [6].

NEGATIVE IMPACTS OF ICT ON PEOPLE

Job loss: One of the largest negative effects of ICT can be the loss of a person's job. This has both economic consequences, loss of income, and social consequences, loss of status and self-esteem. Job losses may occur for several reasons, including: manual operations being replaced by automation e.g. robots replacing people on an assembly line. Job export. e.g. data processing works being sent to other countries where operating costs are lower. Multiple workers are being replaced by a smaller number who are able to do the same amount of work e.g. a worker on a supermarket checkout can serve more customers per hour if a bar-code scanner linked to a computer is used to detect goods instead of the worker having to enter the item and price manually.

Reduced personal interaction: Being able to work from home is usually regarded as being a positive effect of using ICT, but there can be negative aspects as well. Most people need some form of social interaction in their daily lives and if they do not get the chance to meet and talk to other people he or she may feel isolated and unhappy.

Reduced physical activity: A third negative effect of ICT is that user may adopt a more sedentary lifestyle. This can lead to health problems such as obesity, heart disease, and diabetes. Many countries have workplace regulations to prevent problems such as repetitive strain injury or eyestrain, but lack of physical exercise is rarely addressed as a specific health hazard [6].

ICT CAN HAVE A POSITIVE EFFECT ON ORGANIZATIONS

By using ICT has brought a number of benefits to organisations, such as: Cost savings by using e.g. VoIP instead of normal telephone, email / messaging instead of post, video conferencing instead of traveling to meetings, e-commerce web sites instead of sales catalogues. This could allow access to larger, even worldwide, markets [6].

3. Impacts of Information Technology on Society

With the development of computer industry and internet networks during the last three decades things have changed and global communication has reached an unprecedented height [11]. With these developments immense scopes have come to the surface to impart learning in a much more efficient and interactive way. Multimedia technology and internet networks have revolutionized the whole philosophy of learning and distance learning and provided us with the opportunity for close interaction between teachers and learners with improved standard of learning materials compared to what was existing only with the printed media. As we mentioned earlier it has gone to such an extent to create a virtual class room where teachers and students are scattered all over the world.

We could be able to work on jobs being thousands of miles away through electromagnetic wave. That way the problem of skills shortage in some countries could be reduced and efficient people would be available to do the job.

Quick dispatch of information globally has facilitated the commercial expansion to an extremely high level with a small firm being able to sell its products to another part of the world very easily as they can communicate to each other in no time and fix up the deal. Development of electronic commerce has made it very convenient for individual buyer to select the product online and make payment immediately. However this has its problem as the buyer has not seen whom he/she is buying from and can never hear from the seller once the money has been paid. This kind of case has come to our attention.

Virtual reality, probably much more advanced and more seamlessly integrated devices (e.g. one could think of a device projecting images (perhaps from glasses) directly onto the lens of a human's eye), allowing people to disregard their surroundings. This will allow people to travel virtually, e.g. one could go on holidays just by playing a certain program, relax there, walk around, take it easy [5].

These days one can attend business meetings without having to be there physically. The business partners in such a virtual meeting are able to see and hear each other as if they are real. Mobility may be very important these days, however, in the new century, the need to travel physically is decreasing significantly, instead of flying to a meeting in New York one can just attend the meeting virtually and save a lot of time and money (and protect the environment) [5].

Contact with other people will only happen if desired by a person, everything else will be done by technology. As an example, nobody will need to go shopping anymore, one will order things needed via some special sophisticated devices which are easy to handle and understand. One can display the goods, possibly even smell, feel or hear them [5].

Treating untreatable disease like cancer would be much easier as the DNA structure could be defined accurately to guide the kind of cell-based treatment required for a particular patient.

4. Conclusions

In this paper we studied the impacts of information technology in our lives so far. We also studied the future of our society with more sophisticated developments in information technology and its applications in our society. We also discussed the negative effects of information technology like loss of privacy, unauthorized access to important data. Hacking of government run systems by hackers can paralyse a government functioning and can cause immense disruptions. But we believe benefits from information technology far outweigh the negative aspects of information technology. As we discussed we can access information for our studies or research very quickly these days. Also the global communications have become unbelievably quick through email services. We strongly believe in future also information technology would bring much more conveniences in our lives than any negative impacts.

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