

APPLICATION OF INFORMATION TECHNOLOGY IN SOCIAL SCIENCES

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Abstract

Last few decades of 19th century has witnessed enormous growth in computer application in every field of life and today either its engineering or social sciences concepts of research and development is incomplete without application of this digital machine. In social sciences many problems of research involve data modeling, information retrieval and advanced sophisticated analysis techniques. Computational social science is an embryonic field and foundation of new hypothetical and practical novelty for social science more generally. The question is whether the social sciences persons adopt the technology in the right path or not? How the computers fulfill the demand of the researcher in the social sciences domain. Has the computer fundamentally changed the social sciences? Present study was conducted to see the usage of information technology specially the computers in the field of Mass Communication. How ICT has helped in technological development of communication. This paper will further comment on how information technology and mass communication complement each other. In this contemporary and world of these days, to remain without the knowing of ICT is like having a pen with you but without the knowing of what to do with it. The purpose of this research is to discuss the value of ICT in huge interaction.

Keywords: Information Technology¹, ICT², data modeling³, computer simulation⁴

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¹ Information Technology that merges the computing with the high speed communication links carrying data, sound, and video.

² ICT refer to the merging of audio-visual and telephone networks with computer networks through a single cabling or link system.

³ Data modeling is a process used to define and analyze data requirements needed to support the business processes within the scope of corresponding information systems in organizations.

⁴ A computer simulation is a network of computers that attempts to imitate an abstract model of a particular system.

Introduction

Today we are in the era of information technology. Now the use of IT dramatically spreading day by day, shifting from the age of computer and mobile devices towards fast growing research in every field of life in order to effective use of the computers. Now in the social sciences research computer simulation is one of the important experiment, but its rate is not fixed and may changed as per the needs of the social scientist. In social sciences many problems of research involve data modeling, information retrieval and advanced sophisticated analysis techniques. Whether it is finding optimum cost of production or alternative solution of a complex financial resource allocation, computing methods are available which can complete the tasks in minutes which is used to be an assignment for weeks.

For instance linear programming is one of the most effective tools to solve many of the business problems. Linear programming attempts to transform real life business problem into mathematical models and fast computing software can find optimum solution from hundreds of alternative solution. Education planning and management is another important area of social sciences research. Today concept of classroom is altogether changed. Application of computer and information technology has given the idea of virtual classroom. Now students can attend a lecture in his/her bedroom using computer based online courses. Tailoring such courses and developing effective evaluation method is another important application of computer system. Online test system not only easy to administer but compilation of result is quick and accurate.

Computers have become an essential part in the lives of the modern men. Perhaps everything is computer-assisted today; therefore one can't imagine a life without it. Just the way we are moving towards modernization of the society, advancements in communication are coming about. Distances are no longer distances, thanks to technology. Talk of radio, television, newspapers, magazines or whatever comes to your mind related to mass media- everything needs 'computer-assistance'. Take the example of newspapers, where every word typed and arranged is computer assisted. No printing would have been possible without it- though type writers weren't like a computer, but they could not store, which was their major disadvantage. Even the most basic information is searched with the help of computers. No one today has time to go around magnifying details, because everything is available online. Going online, using the internet would not have been possible without computers. Storage is the biggest advantage from computers.

Usage of It in Mass Communication

These days IT is not only present in the aspects of life, but has become the part of lives. Modern era is an era of IT; it has brought the revolution in every field of life. It covers the huge technological tool and forms that make a strong network and its advancement has enable people to do their fullest by consuming a short time and less efforts. It has not only a single angle that attracts the large population but, the fact determines its importance is that masses are attracted towards its efficiency and fast response. The

basic necessity of the present age is to communicate without the process of communication the concept of the organized interaction fades⁵. Communication process helps in the interaction and it made the network to share. Basically the medium is provided by the IT in the present age to share. In short words the traditional means of the communication are replaced by the latest technologies. The sharing platform of the Mass communication is more enhanced by the usage of IT. Mass communications have grown through increasing use of technology and the computer is possibly the height to date of this growth process. Recent developments in computer technology are reducing the limitations of computers as mass communication devices. The growth of remote teleprocessing is one important step. Computers can now interact with users via devices (terminals) which may be hundreds of miles from the actual mainframe machine .Many terminals can be in operation at once, so that many users may communicate with the "brain" simultaneously.

Furthermore, computer languages are being developed which are peculiarly suited to such remote teleprocessing, and which permit communication in language closely resembling conversational English. The user can also ask supplemental-questions and receive individualized answers unlike newspapers, radio or TV. IT has become the major part of the modern communicating system that is why the speed of interaction has increased rapidly⁶. The new technologies developed in the communication utilize computers which has changed the traditional means of reporting, advertisement, writing and the Public relation etc⁷.

To disagree with the fact that Information and Communications Technology is not only important but crucial in Mass Communication is an underestimation. Our world has become a global village without necessarily destroying our various cultures. Like the Radio and Television before it, the Computer has eventually become a home appliance that many people look at as a vital medium of communication. This new technology has not only changed the studies of Mass Communication but also changed the traditional concept of Mass Communication. Lets talk about electronic commerce on internet where customers can easily access their wants what they need is just one click away from them, shopping is very easy nowadays. On the other hand the advertising agencies advertise their products on the internet where they met with the customers who need that product.

It includes an extensive variety of computing hardware (PCs, servers, networked storage), the fast developing individual hardware market encompassing personal devices, mobile phones, MP3 players, and much more; the jam-packed range of application software from the nominal home-developed spreadsheet to the major enterprise packages and online software services; and the hardware and software desired

⁵ Ezziane, Z. (2007). Information Technology Literacy: Implications on Teaching and Learning. *Educational Technology & Society*, 10 (3), 175-191.

⁶ Frank W. K. Amenyedzi et.al; "The Use of Computers and Internet as Supplementary Source of Educational Material: A Case Study of the Senior High Schools in the Tema Metropolis in Ghana"; *Contemporary Educational Technology*, 2011, 2(2), 151-162.

⁷ Anke Schwittay; "New Media Practices in India: Bridging Past and Future, Markets and Development"; *International Journal of Communication* 5 (2011), 349–379, 1932–8036/20110349

to operate networks for broadcast of information, again varying from a home network to the largest global private networks controlled by chief commercial enterprises and, certainly, the Internet. The term is sometimes used as Information Technology (IT), particularly in two areas: government and education. In the general usage it is often assumed that ICT is identical to IT; ICT actually covers any medium to record information⁸.

Background

The use of modern computer equipped with latest IT facilities has dramatically increased in every area of the social sciences through the creation of cognitive sciences; adaptation of AI based approaches, psychology and philosophy specially. Mass communication is the term used to demonstrate the scholastic study of the various means by which improvement in IT which adds a great contribution in every corner of life mainly in mass comm. The broad role of ICT in the development of youth and for our society towards linkages programs, efficiency, planning and management, learning, forming skills and teaching. People were thinking that how IT will help in information sharing that basically reshapes economy but now due to the advancement in technology it basically reproduce the society⁹.

Mass communication is basically to convey the information or message to a large segment of audience through any medium or technical device (Edward, 1990). The experiment was conducted to see whether ICT has influence on the youngsters using ICT or the elder not using the modern means of the communication experience with digital media has led youngsters to have “new and different expectations about how to gather, work with, translate, and share information.” It provides a useful typology of the use categories of IT by scientists: embedded, coordination, and dissemination¹⁰. Embedded IT and communication tools built into scientific tools and experiments such as sensor networks, grid computing, remotely-operated telescopes and observation devices, visualization and virtual reality tools, and telemedicine tools. They are a primary part of collaborations and make the “big science” research possible. Coordination ICTs, such as e-mail, telephone, web pages, instant messaging, chat, wikis, and so forth, constitute the general communication process in the possible way to speed up the transmission of message. ICT infrastructure allows to plan, share data and results, write papers, and maintain contacts and help in the communication process by using the IT. Dissemination ICTs, such as electronic journals, popular media, web blogs, and project web sites, transmit the findings to the audience, generally in one way broadcast¹¹. Concentrating on the coordination of ICTs, it is observed that the different

⁸ Ernesto Villalba; “Computer-based Assessment and the Measurement of Creativity in Education”, New Approaches to Skills Assessment and Implications for Large-scale Testing; EUR 23679 EN - 2009

⁹ Dr.B.K.Ravi ; “NEW MEDIA, CULTURE AND SOCIETY”, Academic Research International, ISSN-L: 2223-9553, ISSN: 2223-9944 Vol. 2, No. 2, March 2012.

¹⁰ Alvarez, R. (2008) Examining Technology, Structure and Identity During an Enterprise System Implementation, *Information Systems Journal*, 18, 203-114.

¹¹ Lamb, R., & Davidson, E. (2005). Information and communication technology challenges to scientific professional identity. [Electronic version]. *Information Society*, 21(1), 1-24.

disciplines and research areas adopt and use various ICTs, and ICTs have replaced or enhanced the previous system of communication¹². While communicating with the masses, the range of the media used needs to be broad and wide enough to cater to the audience of millions scattered all over the globe. Therefore, to meet these needs, mass media is required. Mass media refers to the medium specifically designed by the use of advanced information technology and used by mass communicators, which are especially designed to reach a very large audience.

Mass media includes medium like television, radio, newspapers, internet, etc. Furthermore, media has enhanced with the growth of information and communication technology. They are now able to gather more needed information and nourish their audiences with current news and information through their website and other electronic media. They are also able to use the media to seek views from their audiences on various issues. Similarly, press houses are able to plan the pages of their News papers and easily print the hard copies using this technology. In spite of its benefits it has its bad sides too, many communicators who are taking pay for their jobs of communicating people are now unemployed because their jobs are now easily be done without them. Today's major concerns are inability to control vulnerable information. In conclusion, it can be realized that the development of information and communication technology has affected mass communication more positively than the negative thus, the role of ICT is significant in mass communication.

We need to know what is the importance of information technology in the field of mass communication today. However this cannot be understood until and unless we know what information and communications technology and mass communication individually is. We need to know that what exactly the ICT is providing that makes it so essential for just about every press organization and other systems of mass communications in the world. The key is in the swiftness with which the information reaches the masses and the effect that it creates overall. ICT symbolizes a market that offers techniques, and innovative tools to gather and deliver electronic information quickly and to a greater opportunity of viewers. Every technological innovation that controls mass communications effectiveness is regarded part of the ICT. The importance of ICT in mass communication is something that cannot be denied. If we see how effective and fast the media has become today we will simply be mesmerized about the system that ICT has introduced in our lives today.

Had ICT not evolved as it has today, had it been somewhat back dated there was no way by which the mass communication industry would have progressed to this point. Look at televisions and see the quality of picture and sound that has improved over time. See how effective the satellite television has become? This is all because of the advancement of ICT. When questioned about what role ICT plays in mass media we are often confused about what is the right thing to answer. Well for a matter of fact, mass

¹² L. A. Ogunsola , "Information and Communication Technologies and the Effects of Globalization: Twenty-First Century "Digital Slavery" for Developing Countries--Myth or Reality?", *Electronic Journal of Academic and Special Librarianship*, v.6 no.1-2 (Summer 2005).

communication became as effective a means of imparting information when it took on the electronic media as a means of doing so.

Yes, the press and print media was there but whatever and how influential an effect visualization creates, it is now possible by mere words which is the power of the print media. ICTs like the Furthermore, media houses have also enhanced their performance with the use of information technology. They are able to gather more needed information and feed their audiences with current news and information through their website and other electronic media. They are also able to use the media to solicit views from their audiences on various issues. Similarly, press houses are able to plan the pages of their News papers and easily print the hard copies using this technology. We even anticipate information just about anything to be prepared and sent to us information wherever we are. Mass communication is a platform that does this but the process and efficiency of the delivery of information without the use of ICT can be said to be useless and slow. Manual bringing of information on public platforms without the use of ICT is now unquestionable for media companies. Huge media giants now rely on the use of ICT to transfer their information on public platforms.¹³ More so, the internet offers businesses information on the local and foreign stock market and the opportunity to trade their stocks. Financial institutions also make use of the information on the financial market to take decision. Government also uses information technology especially the internet to reach most of its publics. This helps to disseminate information on government policies and programmes. Political parties also make use of the internet and other electronic media to disseminate information on their selected candidates, party policies and programmes.

Also information technology has impacted positively on Advertising Agencies to increase productivity since they could easily access information on the customers of their clients through research on the internet, develop their advertisement and print hard copies of it, irrespective of the size of the copy. Likewise, public relations practitioners are able to easily analyze data collected from research on the internet and other sources and make it available to management.

In spite of these benefits of ICT in Mass Communication, there are bad sides to it. The introduction of ICT, has rendered most communicators unemployed since their jobs can easily be done without them. Also, the inability to censor information on the internet or control certain information from reaching some vulnerable group of people in the society is a major concern to many people. In conclusion, it can be realized that the development of Information and Communication Technology has impacted more positively on Mass Communication than negatively and so ICT plays an important role in Mass Communication.¹⁴

¹³ Villalva, A. (2012). The Role of ICT in Mass Communications. Retrieved March 20, 2012, from ezine articles.

¹⁴ Mediations , A. (2010, february wednesday). AGORSOR'S MEDITATION. Retrieved march sunday, 2012, from <http://agorsorsmeditation.blogspot.com/2010/02/what-is-importance-of-ict-in-mass.html>

Methodology

In many research situation uncertainty is associated with volatile real work situation, for instant in risk in environment, production cost or transportation problem. These uncertainty effectively impact overall decision making. Probabilities methods in statistics based on computerized approach produced efficient algorithm to handle uncertainty in data. Genetic algorithm, fuzzy logic, Bayesian network and neural network are effective tools for capturing uncertainty in changing parameter of business problem. For instance production process in any industry are affected by parameters like input supply, resource constraints and logistic support etc. if input supply is not consistent not only the cost of production but demand and supply of product is badly affected. Bayesian network can identify the most important functions contributing to uncertainty and accordingly protocol can be developed to minimized or optimized uncertainty.

Similarly another kind of uncertainty in social sciences research is to properly categorize the data item, however in many situations it is difficult to implicitly categorize. For instance to identify customer of bank loan it is difficult to completely classify whether a client 100 percent risk free or 100% risk prone. In such situation fuzzy logic is an effective method in decision making. In fuzzy logic a specific scale of uncertainty or risk can be developed based on different parameter of client data. Same methodology can be used in clinical psychology where patient are needed to be grouped on the basis of degree of severity of behavioral response. Artificial intelligence techniques and machine learning provide different opportunities to address different social sciences; biological research prime factor in doing so is appropriate knowledge representation of raw data called.

The main objectives of our study are;

What is the importance of IT in mass communication? What are the different tools used in the communication by the different categories of the sample? According to the sample what is the concept of IT combined with communication (ICT)? Which form of media utilizes more information technologies? The role of computers in the daily process of the communication? The advantages which are experienced by media by using the IT? The disadvantages experienced by media due to the IT faults? How IT is involved in the daily life? The ease in the communication by the help of IT? The relation between ICT and the satisfaction of the social utility?

We collected a limited sample of 90 people of different genders, ages, level of classes, social and economical backgrounds, institutions, languages, areas of Karachi. the sample includes the 3 categories; 1) 50 students of Mass communication 2) 15 teachers of mass communication 3) 25 different people related to the any field of media. For this survey, a questionnaire was designed.

In an information era, computer will be integrated into every society and will do much to improve the quality of life information technology opened new doors for media industry. No doubt this is the age of information technology; media industry has also made tremendous progress due to this new technology. Due to this new advancement media is fragmented, media manipulated and information is overloaded. Through this new technology media is now growing fast, it realizing the importance of information and communication technology. The introduction of IT in the country has led to varying degree of improvement in media industry. Here is no doubt that IT was a tremendous Role in media industry but there is a big gap among both organizations. Due to this advance technology advertising, production media printing, broadcasting, telecasting and in web edition of news papers had a great progress. We can conclude that IT has a great role in print, broadcast, electronic and advertising media. Without IT media in this age of information cannot survived.

It was intended to study the emergence of new technologies in mass media and their effectiveness in today's century as the world has changed to an extensive degree due to the day by day arrival of new technologies. The problems associated with the diffusion of these new Information and Communication Technologies in the society are also being studied in this research. Moreover, the future of Information and Communication Technology in mass media is focused.

Results and Discussion

The increasing developments in the sphere of information technology are inevitably resulting in globalization. As a result, many institutions of the society are developing, one of them being the media. In the current time, the media plays a vital role in educating the masses. The media of mass communication displays virtually all kinds of information to an audience of millions, scattered all over the world. The survey analysis shown below in table 1.

Table 1: The data collected by conducting the survey is analyzed as follows:

<i>The relationship between the IT and the Mass communication:</i>	
<i>Students</i>	<i>The IT and the communication are merged in modern age. ICT is important for our connection.</i>
<i>Teachers</i>	<i>IT simply has modified the traditional means of communications.</i>
<i>Media professionals</i>	<i>The relationship of the media and the IT is very strong. without this bond the process of communication can not be so fast.</i>
<i>Frequent Utilization of media:</i>	
<i>Students</i>	<i>New media</i>
<i>Teachers</i>	<i>Electronic media</i>
<i>Media professionals</i>	<i>New media</i>

Life without ICT:	
<i>Students</i>	<i>Life will fades</i>
<i>Teachers</i>	<i>It would be difficult to get knowledge</i>
<i>Media professionals</i>	<i>Life seems to be impossible as the speed of communication would become slow as compared to the modern age.</i>
The influence of Computers in life:	
<i>Students</i>	<i>Helps to prepare assignment;Social media has reduced the distances</i>
<i>Teachers</i>	<i>Source to get the instant update.</i>
<i>Media professionals</i>	<i>Organizing the programming;Technical help;Source of faster communication</i>
Contribution of the ICT in the respective field:	
<i>Students</i>	<i>Helps in assignments;Get information from internet;Fb helps in connectivity</i>
<i>Teachers</i>	<i>Source of connectivity;Updating tool</i>
<i>Media professionals</i>	<i>Organizing the programming;Technical help;Source of faster communication</i>
Different tools of the communication:	
<i>Students</i>	<i>Fb,twitter.skype,blogs,news groups, inpage, MS office,mobile, iphone, internet,</i>
<i>Teachers</i>	<i>Fb,twitter.skype,blogs,news groups, inpage, MS office,mobile, iphone, internet, different software</i>
<i>Media professionals</i>	<i>Software for proof reading, technical control, editing, film making, adobe readers,orcles, wed clipping tool, editing tool etc.</i>
Advantages of computers:	
<i>Students</i>	<i>Communication;Connectivity;Reliability of sources</i>
<i>Teachers</i>	<i>Connection between different people;Helps to record data;Quick way to access information</i>
<i>Media professionals</i>	<i>Saving record;Helps in creating graphics;Editing;Film making;Online reporting etc</i>
Disadvantages of computers:	
<i>Students</i>	<i>Connectivity with fake people</i>
<i>Teachers</i>	<i>Wastage of time in nasty stuff</i>
<i>Media professionals</i>	<i>Any fault in the technical tool may lead to remove data which effects the performance</i>
Best device of IT for communication:	
<i>Students</i>	<i>Mobile;Computers</i>
<i>Teachers</i>	<i>Mobiles;telephones;Computers</i>
<i>Media professionals</i>	<i>Mobiles;Telephones;Computers;Camera</i>
Level of advancement of ICT:	
<i>Students</i>	<i>Moderate</i>
<i>Teachers</i>	<i>Minimal;Moderate</i>
<i>Media professionals</i>	<i>Moderate</i>

<i>Level of ease in communication made by ICT:</i>	
<i>Students</i>	<i>Advanced</i>
<i>Teachers</i>	<i>Advanced+ moderate</i>
<i>Media professionals</i>	<i>Advanced</i>
<i>Satisfaction of social utility and ICT:</i>	
<i>Students</i>	<i>Fully satisfied</i>
<i>Teachers</i>	<i>Satisfied</i>
<i>Media professionals</i>	<i>Fully satisfied</i>
<i>Time spend on computers:</i>	
<i>Students</i>	<i>100 times for month (duration depends on the nature of work)</i>
<i>Teachers</i>	<i>30 times for month(duration ranges from the 1 to 2 hours)</i>
<i>Media professionals</i>	<i>160 time per month (duration depends on the nature of the work)</i>

The use of ICT in mass communication has effectively changed the face of the entire media. Today the mediums which are used for imparting knowledge to the masses or the mediums which are used by the mass to gain education have changed drastically due to the development of ICT in the recent years as refer in table 2.

Table 2: The % of the mediums uses Information and Communications Technology today

Mediums of Mass Communication	Percentage usage of ICT
Television	35%
Radio	5%
Print media	5%
Internet & social media	40%
Cell phones	15%

The age of internet has surely brought about itself a revolution for mass communication. People now keep in touch with others and stay updated about the world while they are on the go. Online news sites available over the World Wide Web have made it possible for people to stay updated no matter where they are. Wireless internet connections for laptops, cellular data networks for cell phones and broadband and wi-fi connections for home or office computer users. These are all technological innovations of the ICT and just see how they have affected the mass communication. Now information does not have to wait for news broadcasts over television networks or newspapers releases the next day. We can retrieve information from whatever part of the world we can just within a few seconds.

Conclusion

The development of Information and Communications Technology (ICT) has completely customized the way of the world in some essential locations. Understanding the ICTs excellent features when it comes to managing, keeping, looking, re-creating and submitting information are essential. The ICTs' inexpensiveness provides new opportunities for resource work and non-institutionalized organizations for mass communications to arrange; connect system and publish/disseminate their information in a better way. There is no way we can deny the importance of information and communication technology for the mass communication. The world has become a connected community or global village in terms of the ICT as we should more essentially put it, without actually damaging our various morality and principles. Like the radio stations and TV sets before ICT, your PC has progressively become devices that many people look at as an essential technique of communicating with the masses from all over the world. Without the use of ICT today the effectiveness of mass communications is not possible, this was never easier before the implementation of ICT in the field of mass communication. There is no question of effective communication to the masses without the presence of ICT. The message might have come across earlier as well but it never made enough impact as it does today and that is just because of the use of information and communications technology today. It won't be wrong to say that the effectiveness of mass communication stays incomplete without the presence of ICT today.