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Information & Communication Technology and 'Individual': Prospects & Concerns

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Information & Communication Technology and 'Individual': Prospects & Concerns

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I. Introduction

Historically speaking technology has played a significant role in the evolution of human civilization. From hunting gathering societies to agrarian, and from industrial to information, technologies have served as one of the major determinant of socio-political and economic system of a society (Hoyle, 1953). The invention of wheel and printing press are significant examples of how technologies can set off cascades of revolutions within societies (Mc Chesney, 1995). Technology refers to the hardware and software i.e. instruments and techniques to resolve human issues or achieve certain objectives (Tehranian, 2004).

Political organizations and businesses of each epoch in history seem to be the major benefactor of technologies; however a profound look suggests that technologies have always been the invention of the individuals and for the individuals. It is the novel use of technology that gives birth to newer political, economic and social values and institutions of the society. Technologies, not only facilitate the social life but also the economic and political life of individuals. The blessings of technology for social life of individuals need no praises; however the political and need no praises; however the political and economic aspects of technology for individual have remained a vital concern for scholars for years. Technologies have always enabled individual to participate in political, economic and social life of the society (Tehranian, 2004). New technologies in every age raised discussions about their mobilizing power. In order to become a participant of any political process, the individual requires information. The emergence of newspapers in Europe helped change the role of individuals from spectator to participant in the political process (Gordon, 2004). The 18th century bourgeoisie were facilitated by printing press, along with other gradual developments that reduced the cost of production. The invention of electric telegraph by Samuel F.B. Morse in 1837 and the telephone by A.G. Bell in 1876 facilitated people to communicate at long distance, again supported by additional developments like automatic switch boards to reduce costs and ameliorate quality. The radio- the invention of Marconi in 1895, probably carried with it high expectations of its democratizing power followed by the Baird's invention of television in 1923 (Gordon, 2004). However, owing to state and market interference, along with the rise of the cultural industries, individual lost many of its political, economic and even social benefits and got 'refeudalized' (Habermas, 1989).

Nevertheless, with the emergence of information and communication technologies (ICTs), several new prospects ushered in for individual and a possibility to achieve its lost status of participant in the political and economic affairs of the society (Khan et al, 2012). The role of the internet and other digital technologies is paramount in this respect. ICT influences the lives of a rising number of individuals in different ways all over the globe. ICTs have not only been an essential element at the macro-level as in process of globalization, but equally at the micro-level where the enhanced use of mobile phones, for example, transformed daily communication methods universally (Weigel & Waldburger, 2004: 16).

Ever since the inception of the internet in the last decade of the 20th century, the number of the internet users has been on the rise across the world. It is being used by common citizens, activists, nongovernmental organizations, telecommunications firms, software providers, and governments across the world (Shirky, 2011).

This first section of this paper explores the significant digital technologies that directly influence the life of individual. The next section highlights the prospects generated by ICTs for individual. ICTs have

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also created some challenges for individual which would be discussed next. Finally, the whole debate would be capsuled in a schematic model for the sake of clarity.

II. Information Technology Revolution

ICTs refer to the entire range of technologies devised to retrieve process and communicate information in the shape of text, sound, data and images. ICT cover the full range from conventional widely used appliances such as radio, telephone or television to more stylish devices like computers, the Internet, networks, hardware and software, satellite systems, and podcasting Internet. The blend of technologies used might be determined chiefly by the particular local perspective and demand (Weigel & Waldburger, 2004).

ICTs as high-tech tool are rather well-known; however their significance lies as stimulators of novel associations and spaces. ICTs are actually generating a new global arena attracting a fresh competition regarding the distribution of power, information, and resources (Van Dijk, 2006).

Industrial societies played significant role in the rise of informatics revolution. Different labels have been used to describe it like 'Post-Industrial', 'Knowledge', 'Information', 'Postmodern' and 'Network Society'. The different labels actually describe the various aspect of the same phenomenon. The most remarkable changes can be observed in communications systems at both global and national levels. Information revolution has (1) facilitated merger of telecommunication and computers, (2) offered smart personal communication devices, (3) swiftly expanded the wireless networks and devices (4) facilitated the storage, processing and retrieval of information in all sectors of the economy (Tehranian, 2004).

The invention of press (1450) is a typical illustration of how novelty can set off cascades of revolutions within societies. ICTs are expected to play similar role. Due to their service potentials and prevailing nature ICTs have social, political and economic implications (Mc Chesney, 1995). They offer a variety of tools to businesses, states, civil society and individuals to achieve their goals.

In order to estimate the impacts of ICTs on individual, it would be useful to have a broader review of those information technologies that facilitate individual in various ways.

a) Digital Technologies

Digital technologies fundamentally are the extensions of the ways individual communicate. The human desire to communicate effectively and easily motivated the efforts for development of these technologies. Digital technologies involve creation, sharing and usage of information in digital form. Digital information is in the form of 'data' that can be structured, manipulated, stored and exchanged through digital equipments.

There is a huge variety in the available digital technologies that perform varieties of functions. Moreover their speed, efficacy and cost-effectiveness are rapidly increasing.

i. *Internet*

The Internet is 'an interconnected system of networks that connects computers around the world via the TCP/IP protocol' (Online American Heritage Dictionary). It is a network of networks which enable users at any one computer, if they have authorization, to obtain information from any other computer and sometimes talk directly to users at other end (Gordon, 2004).

The Internet is a public, accommodating, and self-sustaining service accessible to hundreds of thousands of people across the world (ACARM, 2005). It is a unique matrix of networks which is established on a "many-to-many" model of information distribution, contrary to the "one-to-many" structure of mass media (Crack, 2007).

Electronic mail (e-mail) is probably the most frequently used service on the Net. It has provided a substitute, to almost all the Internet users, for the conventional postal service in order to send short written messages. World Wide Web (WWW) is the most extensively used element of the Internet. Through the Web, one can get access to millions of websites containing bulk of information (Rouse, 2008).

ii. *Networking*

A digital network connects two or more computers through wires, telephone lines, radio waves, satellites, or infrared light rays and enables them to share resources, exchange data, and facilitate electronic communications (Winkelman, 1998). The Internet is the largest digital network in the world. Networked computers can expand the scale of the world to unprecedented levels (Bell, 2008).

There is substantial evidence that virtual networks facilitate diasporic public spheres; support ethnicity by e-mail and uphold the functions of INGOs and social movements. They also offer information, support and facilitate possibilities for companionship for a multitude of people poorly served by the available facilities in the civic spaces where they actually live. In sum, most suitable to the global context, networks can construct social associations without limitations of physical space or presence (Axford, 2004).

Moreover, it is expected that with the passage of time the networked population will not only increase in number, rather they will also acquire better access to information, enjoy more opportunities for debates and collective action (Shirky, 2011).

iii. *Social Software*

A social-software facilitates socializing processes and social activities by brining individual or groups of individuals together in regular contact. It enables them to communicate with each other beyond temporal and spatial confines (Oblak, 2002). The different types of social media are similar in that they all posses' dense fundamental network structures that supply metadata and environment that can be useful while retrieving information from their content (Finin et al., 2008).

The Internet-based social media systems including blogs, wikis, message forums and media-sharing sites, have turned out to be significant modern ways to pass on information, hold discussions, and shape social communities on the Internet. Their coverage and ramifications are important, with hundreds of millions of people supplying content consistently from around the world. Recent researchers suggest that social media systems are shaping about one third of new web content (Finin et al., 2008).

Social networking sites may be defined as web-based facilities through which individuals can (1) create a profile, public or semi-public, within a circumscribed system, (2) generate a list of other users with whom they share a link, and (3) observe and navigate their list of associations and those made by others within single system.

Social network sites (SNSs) are unique, not because they help individuals connect with strangers, but because they facilitate users to articulate and make observable their social networks. This result in links between individuals that would not otherwise be possible, but that is seldom the objective and these interactions are often between 'latent ties' who share some offline association (Haythornthwaite, 2005).

Though community based websites still exist and flourish, SNSs are essentially woven around individuals, not interests. Initial public online communities like Usenet and public interaction forums were arranged by topics, however, SNSs are designed as personal networks, with the people at the core of their own community. Facebook is a good example in this perspective (Boyd, 2008).

iv. *Mobile Phone*

A mobile phone, sometimes also called as a cellular phone, or cell phone, is a communication invention that can make and receive telephone calls over a wireless link within a wide geographic area. It operates by linking to a cellular network offered by a mobile phone operator, permitting access to the public telephone network (Tanenbaum, 2002).

Contemporary developments in the mobile phones technologies include the improved features of phones to generate and pass on contents other than SMS. High standard image and video facilities in the latest generation of mobile phones has paved the way to several new software that enable individuals to publish images, audio, and videos from mobile phones directly to related websites. Similarly, bulk SMS can also be sent through mobiles (Yadav & Rani, 2011).

By the end of 2011, there were around 6 billion mobile subscriptions around the world (ITU, 2012). That translates in to 87 percent of the entire world population. It is an enormous rise from 5.4 billion in 2010 and 4.7 billion mobile ownership in 2009. This shows that individual access to modern technologies is on the rise.

III. Prospects for Individual

Like any dominant technology of each epoch, ICTs are the characterizing technology of information age. Just as it has facilitated state and businesses in variety of ways, similarly it has opened new avenues for individual as well. It is creating an environment in which individual's political, economic and social capabilities get ameliorated due to various factors. However, the same technologies have also raised some of the newer concerns for a citizen.

a) Access to Information

In the modern age, due to ICTs greater number of citizens can access unlimited information. The Internet plays a significant role in this perspective. It supplies millions of pages of information on almost every subject (Khan et al., 2011). Owing to advancement in the Internet technologies both the quantity of available information and quality of access is ameliorating. Today, any one with some fundamental computer literacy and access to the Internet can easily retrieve information of his/her need from the Internet (Khan et al., 2012).

Access to information is a step forward in empowering individual. Obtaining and diffusing political communication through the Internet is swift, convenient, and cost-effective. New technologies supply information and apparatus that may raise the position of the public in the socio-political domain (Papacharissi, 2002). Certainly, the swift diffusion of the ICTs into various aspects of public life was chiefly raised by its historically matchless capabilities for "interactive, unmediated and synchronous communication" (Oblak, 2002). Moreover, ICTs supply strategic devices that serve as stimulant for transformation by raising efficiency and effectiveness (Kalas & Finlay, 2009).

b) Connectivity

ICTs help connect people together. An individual as a student, worker, or as a businessman may be extremely busy but if he/she can remain in touch with his/her network of relations simply by a cell phone. Higher levels of literacy or computer skill are no more required. The various social technologies not only link people within a state, rather these also facilitate

individual's social connections across the world. Importantly, an ordinary individual with a limited knowledge and skills to use modern technologies can also establish links far away in other continents.

ICTs capabilities to produce networks of knowledgeable citizens reflect their political powers. Cyber enthusiasts contend that the Internet can strengthen democracy by connecting people, with utter disregard to territory, and by fostering public spheres and fresh social movements (Min, 2010).

c) Innovative Platforms for Expression

The potentials of the Internet for facilitating public debates cannot be overlooked. Today, individuals have numerous opportunities for expressing their views. There are hundreds of thousands of political web sites with local, national, and global scope; some of them are partisan, but most are not. It is easy to find chat rooms, discussion forums, new types of journalism, civic associations' platforms, advocacy sites, and sites for promoting citizens' awareness (Dahlgren, 2005). Individuals can easily find spaces for expressing their views to influence political decisions. Increasingly a consensus is emerging among researchers that ICTs are facilitating a virtual public sphere which can help bring the state in touch with the needs of the public (Khan et al., 2012).

One might contend that the net-based virtual sphere has a great potential as a political medium, particularly in redesigning political processes and revitalizing political practices. Moreover, the internet and associated technologies encourage political discussion and provide spaces for it (Papacharissi, 2002).

The Internet acquires a pivotal position in the arena of new politics, particularly its potential for the "horizontal communication" of civic engagement is highly significant. There is little doubt that access to the internet and other technologies like cell phones, has assisted the rise of large-scale cyber networks of activists (Dahlgren, 2005).

d) Economic Opportunities

ICTs potentials to exchange information in run time and facilitate networks reflect the economic prospects for individual. Like technological changes of the past, information technology is also likely to boost productivity, raise the standard of life, decrease prices, and generate new economic activities leading to new employment openings and generation of wealth. The world is experiencing a transformation not due to the fact that computer operators have substituted the secretaries and the typists across the world, leading to reasonable hike in efficiency, rather the information technologies have restructured the economy on essentially different basis, commonly called as information based economy (Tezcan, 2006).

The changes in economy are opening new prospects for individuals. Temporal and spatial transformations brought about by ICTs are facilitating individuals in performing their jobs in relaxed environment at their convenient timings. Similarly, the enhanced 'connectivity' is also giving birth to new economic prospects for individual.

e) Educational Opportunities

Significance of education for individual needs no explanation. ICTs facilitate education processes in variety of ways right from the elementary level to the higher education. The use of audio-visual aids in educational activities is not a new concept; however, computer and later the Internet brought a revolution in the field of education at all levels (Nawaz & Khan, 2012a).

From concept building to simulations, from collecting information to getting in touch with other students of same level and expertise, ICTs are facilitating each and every step in the educational process. The use of ICTs in higher education has particularly been emphasized by the educationists and social scientists for over a decade. Moreover education for all (E4A) in developing countries seem to be a realizable goal because of the proliferation of ICTs in education sector (Nawaz & Khan, 2012b).

IV. Concerns for Individual

Though ICTs are facilitating individual in many ways and have raised individual's socio-political and economic capabilities however, these have also given birth to numerous novel challenges for the individual. These concerns range from privacy issues to tech addiction which influences the individual and collective lives of modern citizens.

a) Privacy

Privacy is an individual's condition of life. Its major quality is exclusion from publicity (Neethling et al., 1996: 36). ICTs influence the various areas of individual's privacy. For example, the interception and reading of E-mails, the electronic screening of individuals in the workplace, and the integration of different databases which contains individuals profile information. Another significant challenge to privacy is the emergence of 'hackers' and 'crackers' who break into others computer systems (Ashoor & Gore, 2011). The hackers and crackers are novel thieves of the information era. They not only steal data rather they can also steal someone's identity by pretending to be who they are not.

ICTs impacts on the individual's privacy can lead to loss of dignity and spontaneity. Moreover it also poses threats to individual's freedom. So ICTs to a certain extent threatens privacy of individual (Rosenberg, 1993).

b) Addiction

The Internet addiction is a kind of psychological disorder which refers to socio-psychological state of those individuals that spend excessive amounts of time over the Internet at the cost of several other social aspects of individuals' lives (Young, 1998). The Internet addiction can take several forms; 1) spending huge amounts of time in establishing online relationships in different chat rooms at the expense of real friends and family members, 2) spontaneously gambling or trading online, 3) compulsive information searching on websites and database, 3) Gaming: compulsive computer games that can be multi-user games as well and 4) addiction to cyber sex or pornography on the Internet (Childnet International, 2006).

The Internet addiction leads to loss of time eventually in the loss of variety of social activities. This in turn creates a range of psychological and sociological anomalies in the life of an individual (Akin & Iskender, 2011).

c) Propaganda

Propaganda is traditionally defined as dissemination of particular information by words of mouth or printed pamphlets distributed by a certain group within a limited community. However, the ICTs make information easily accessible to a wide and diverse audience utterly irrespective of their location (Crilley, 2001). ICTs can easily facilitate groups, cults, political parties in their propaganda campaigns. On the one hand, it drastically hampers the formation of real public opinion and on the other it can also facilitate extremists and terrorist groups in achieving their goals.

The prominent features of the Internet like easy access to information, swift broadcast of multimedia information to large and widely dispersed audiences, low levels of censorship, and cost-effectiveness are all such qualities of the modern technologies that different groups can use to propagate their agendas (Weimann, 2004). An individual can easily become a victim of such propaganda during its search for objective information. Different groups use the websites for disseminating speeches, images, training manuals, audios, videos, slides, blogs, and Web casts for the sake of achieving their goals (Porth, 2006).

d) Piracy Issues

Piracy refers to act of unlawfully reproducing copyrighted material like books, music, movies, and computer programs etc. Before the advent of ICTs, it was uncommon and difficult to print books or burn movies and then circulate on a large scale; however ICTs have made this task quite easy and have given birth to what is commonly called as digital piracy (Al-Rafee & Cronan, 2006).

Piracy on the Internet is not simply a concern of the individual rather organizations of all types also face similar threat. Piracy and copyright issues include intellectual property theft and infringement - the unlawful copying and distribution or sale of books, music, films, software, games, and other intellectual properties (CSIS, 2008).

e) Financial Concerns

In the information era, money has become digital and payment systems has also taken digital form. According to the Federal Deposit Insurance Corporation (FDIC) reports online bill payment systems and softwares have become the most frequent target of digital thieves. Such crimes include the data theft particularly stealing of credit-card information, account details, social-security number and other profile information (CSIS, 2008). Corporations generally have better guard-systems against such cyber thieves however individuals always remain at higher risks in this perspective.

V. Discussion

The Internet integrates various stages of the communication process, for example storage and sharing of information, interaction, and transformation of the communication channels in an unprecedented manner. Internet is a catalog of unlimited information and a medium for its communication, and is particularly significant for its capacity to link different agents efficiently, swiftly and reciprocally. It has really opened several new opportunities for the amelioration of individual's political, economic and social life (Oblak, 2002).

A glimpse at the mobile phone sector suggests that mobile phone ownership in the developed world has touched saturation level with minimum one mobile subscription per person. This shows that recent market expansion is being driven by demands in the developing world, spearheaded by China and India. These two states jointly increased 300 million new cell phone subscriptions in 2010 that is more than the entire mobile users in the US. By the end of 2011 there were around 4.5 billion mobile phone subscriptions in the developing world that is 76 percent of worldwide subscriptions. Mobile penetration stands at 79 percent in the developing world (ITU, 2012). This suggests that the most emphasized ailment of the information era i.e. digital divide, is gradually ebbing away and individual in the developing world are also now enjoying or beginning to enjoy the miracles of 'connectivity' and 'access' to information (Khan et al., 2012). The internet, cell phone and social media played the central role in perspective of political protests in 2011 particularly in Arab world, both as a planner of physical dissent and as a civic realm in its own right. London riots are yet another case in this respect.

Moreover, as ICTs operates beyond territorial boundaries so these facilitate civic interactions beyond nation-state territorial confines. Moreover, speedy and

efficacious access to information raises transparency and assists individuals in making their governments accountable. Similarly by providing citizens information regarding rights, facilities and services, citizens can be empowered and opportunities for public debates can be augmented (Weigel & Waldburger, 2004). Drache optimistically contends that contemporary era through the ICTs and information flows provide the common citizen limitless social opportunities to innovate and shape discursive communities on a range of issues (Drache, 2008).

However, it is a fact that the ICTs on the one hand has raised the accessibility to information but on the other hand, because of low/no mechanisms for controlling the dissemination of information, ICTs are also creating problems for individuals, state and markets in the shape of hiking information security concerns (Papacharissi, 2002; Kapitonenko, 2009).

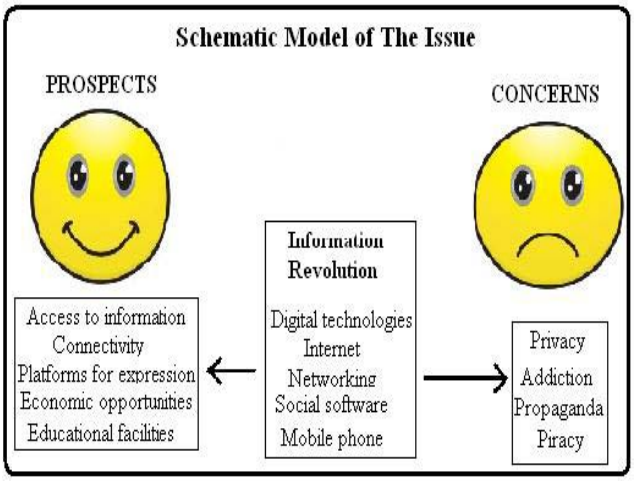
Similarly, there can be no disagreement that a number of such issues have surfaced due to ICTs which require fresh legislations. For example, credit card thefts, illegal fund transfers, profile thefts, copyright issues, and intellectual property rights etc. The severity of these concerns for individual is certain. Furthermore, ICTs make these issues global in nature; therefore a global set of digital laws has become a dire need of the day (Segura-Serrano, 2006).

Moreover, despite numerous positive qualities of ICTs, individual's personal character, aptitude, motivation and Internet skills play significant role in determining the impacts of ICTs on individual and society (Bargh & McKenna, 2004). It is the individual personal character and motivation which leads to problems of 'net addiction'. The off-line crimes can shift to online realm owing to motivation and character of certain individuals. Citizens in any society face risks of theft, violation of intellectual property rights etc., ICTs seem to have augmented these challenges in the face of low/no regulation of the flow of information over the Internet (Min, 2010).

Individual is experiencing a kind of ambivalence with respect to ICTs potentials. There is desire for free flow of information but the hazards of this phenomenon are also recognized at all levels (Otnes et al., 1997; Mick & Fournier, 1998). The human civilization is passing through a transition from industrial to information era. The realms of 'private' and 'public' are getting refined. Individual's private rights need to be redefined (Khan et al., 2012). The situation direly demands novel set of legislations with implications beyond nation-state territorial boundaries (Segura-Serrano, 2006).

Figure 5.1 is a schematic presentation of the issue discussed, showing the significant factors regarding ICTs that on the one hand offer a list of opportunities but on the other pose variety of threats for an individual.

Figure 5.1



VI. Conclusions

Information revolution is fostering numerous opportunities and concerns for individual. ICTs are supplying technological infrastructure for a new globalized world. These have in various ways strengthened the status of individual in society and have offered novel social, political and economic opportunities. However, certain socio-economic and psychological concern cannot be undermined. The unchecked flow of information, often celebrated as a great blessing of the information era, at times seems to be curse for individual.

The need for fresh legislation for monitoring the flow of information seems imperative. However, such legislation can also threaten the newly won freedom of information for individual. Human civilization is passing through a transition, and like transitions of the past, the emerging newer global civilization can be optimistically expected to be more sophisticated, paying more respect to individual's social, political and economic rights.

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