Socio-Economic Issues in ICT Implementation in Education: Major Hurdles & Solution

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ABSTRACT
In recent years we witnessed many radical changes and rapid growth in the education sector. Communication technologies have come to play a vibrant role in democratizing Education not only in the Developed but also in the Developing Countries. However, in spreading the use of Information and communication technology some major difficulties are felt by the policy makers as well as the implementers. These difficulties are felt both at the growth and application stages of communication technology. The problems associated with the growth of ICT that have been focused upon in this paper are Political factors, Economic factors, Cultural factors and technological factors. Among the major problems associated with application of ICTs the focus will be laid on Socio-political factors Human and Administrative factors, Economic factors and Technical factors.

1. INTRODUCTION.
India actively promotes the use of information and communication technologies (ICTs) in education in the formal education sector today, as it has in the non-formal sector for more than 40 years. From the use of radio to spearhead the green revolution, to satellite-based, one-way and interactive television for rural development in some of the most backward districts, today’s thrust for the use of open and distance learning models to serve the larger populations, India has tried it all, with varying degrees of success. In fact, since the early 1950s, Indian policy documents have identified the need to use all media for promoting development and, implicitly, for education. The subsequent policy and plan documents on education, prepared from time to time, have chalked out a role for technology applications, especially in the non-formal education sector.

1.1 POLICY STRUCTURE OF THE GOVERNMENT
The growth of any communication technology in a society and hence its applicability for Distance Education depends to a very great extent on the degree to which policy makers recognize the importance of ICTs in promoting a knowledge based society. Many Developing Countries like India have realized the importance of giving a boost to New Information and Communication Technologies for the general betterment of the society. The New Information Technology Act 2000 passed by the Indian Parliament is a step in the right direction. Many countries have bestowed tax incentives on Communication technology based industries. Some Countries that have paid relatively scarce attention to the area of information technology are lagging behind in the field of spreading education using the latest technology. The failure of Distance Education in many African Countries can be attributed to this. Not only are policies important but also their implementation deserves greater attention. The road to failure is often paved with good intentions. Many structural factors make the implementation of technology a daunting task. At the planning stage the enormity of such factors are often not recognized.

The perceptions and attitudes of a political system greatly affect the acceptance and growth of technology in any society. The same holds true for all the ICTs relevant to Distance Education. A political system conscious of the payoffs of ICT for the enhancement of the educational profile of a country will frame appropriate policies for the adoption and dissemination of ICT through out the length and breadth of the country. As A.W.Bates states while talking about his criteria of Media Selection, Novelty of an ICT should be the least important criteria that should guide the political society in deciding upon the ICT that should be selected. Rather than being guided by the fashion of the day, ICT should always be selected in accordance with its end result, that is the extent to which it can bring about positive pedagogic out comes.

The growth of ICTs will be generally welcomed in a democratic society, because, ICTs are known to democratize societies through wider dissemination of information. However, in a society in which an autocratic form of government prevails, growth of ICTs may not be viewed with favour because, greater access to information may encourage interest in creating more democratic space in the society.

1.2 ECONOMIC FACTORS
In Distance Education, cost is an important factor that guides the adoption and growth of Communication Technology in a country. Developing Countries often lack the initial allocation as well as matching funds to make feasible investments in ICTs. Many countries often acquire costly technology without making provisions for building sufficient infrastructure to run them.

Thomas (1987)¹ states that there are factors that can affect the growth of Communication Technologies in a Country. They are
Most Developing countries are constrained by resource scarcities. Even where the importance of ICTs is recognized, allocation for the development of these is at best paltry. Due to this, many developing countries are forced to depend on mostly traditional means of communication. These are limited in their efficiency.

The Developing countries are vitally dependent on substantial foreign assistance to ensure the development of ICTs. Often it is found that it is very difficult to invite the attention of donors on ICTs. These countries are perennially short of Foreign Exchange for acquiring latest technologies. Most of the Developing Countries are undergoing Structural Adjustment Programmes under the auspices of the IMF.

Cost-efficiency of an ICT is another major factor that is important that determines its growth. Developing countries have to ensure that such a technology is adopted that is easily accessible to the target group and also fulfills all the functions that are expected of it. Such a scenario essentially implies that a costly technology need not always be the best technology. However, it is often seen that Developing Countries often invest in the latest technologies without considering whether the target audience is effectively reached or whether the target audience is interested in the technology. The latter is the case of UGC’s countrywide classroom scheme whose utilization rate is as low as 10%.

1.3CULTURAL FACTORS

Language is one of the major factors that hinder the easy assimilation of ICTs by many developing countries. This hinders transfer of technology. The radio and TV programmes, computer software and the printed texts are produced in different countries bearing different cultural backgrounds. As such, such tools may fail to impress students of another country. For example, a zoology text may safely give the example of a koala in Australia, but the same cannot be replicated in India.

With regard to cultural patterns there are two groups of policy makers. Policy makers can be Pro-implementation or Anti-implementation. It is precisely the cultural moorings of a society that makes people either in favour of implementing technology or to reject it. Japanese have over the years built up a reputation of being quick to adapt and implement new technology. This can be linked to the way in which a new culture of receptivity to new ideas was built up after centuries of stagnation when commodore Perry forced the Japanese to open up their society. Again, in recent times it has been seen that the culture of class room teaching and learning has been so strongly built into the psyche of the teaching community that they often exhibit resistance in the way of implementing technological change that forces a change in the role of the teacher from being a store house of all learning to a manager of the teaching-learning process.

1.4TECHNOLOGICAL FACTORS:

Very often, technology becomes the determining factor in the growth of ICT in any society. One would be justified in applying the Bates criteria for media selection as an appropriate parameter for selecting appropriate technology for educational purposes.

With regard to the acceptance of a particular technology, the factors such as access, cost, teaching functions, interactivity and user-friendliness, organizational issues and speed afforded to change are important issues. In the case of Media selection, Bates regards Novelty of a media as the least important criterion on which a particular media should be selected or rejected. However, in the case of many third world countries, it is novelty of a media that attracts the attention of policy makers. For example, in the late 70s and 80s, the novelty of TV as a medium influenced the UGC to initiate the Country-Wide Class room programme for the benefit of the college students. However much care was not taken to ensure whether, the programme could generate enough interest in the student community to make the programme a success. Moreover, at the time of its initiation, access to TV sets was also a major problem. Even today the tele-density in India stands at a low 80 per 1000. The end result was that UGC’s CWC generated a utilization rate of less than 10%.

Apart from the factors mentioned above, once a technology is selected, there are certain other factors that need the concern of policy makers. Handling of New technology needs care and technical proficiency. For this training is an important aspect. Many developing countries lack enough personnel to train manpower in new technology. Moreover, constant retraining of manpower to acquaint them with changing technology is also important. These often act as constraints before the smooth growth of ICT.

Maintenance of equipment also needs sufficient care. Frequent snags may render equipments unusable. Maintenance as a function also needs sufficiently trained staff, high quality spare parts and machine friendly attitude from the users.

Growth of Communication Technology – A case Study of India:

In any Developing country, the factors mentioned in the previous section can play a major role in either progressing or depressing the growth of modern ICTs. In this regard the case of India is very illustrative. We shall examine the Indian case with the help of the case studies related to the use of two major ICTs namely Radio and Television.

The Relative successes and failures of various types of TV and Radio in the Indian Context:

1.4.1.Radio:

Radio broadcasts in India for educational purposes has taken the form of School broadcasts, adult education and community development projects, farm and home broadcast, university broadcasts and language learning projects. Among school broadcasts, the programmes aired...
by the Central Institute of Educational Technology for primary classes. Among the adult education and community development projects the “Radio-forums” that were tried out in 144 villages around Poona with the help of UNESCO. The programme was tried out in groups of 20 members each. Farm and Home Broadcasts were initiated in a big way in 1966. The University of Delhi works out details in association with AIR Delhi for providing education through radio. Again many Open universities in the country also use radio broadcasts. Even the CIEFL, Hyderabad is engaged in offers modules through radio mode-Language learning Projects .The most prominent example of the same is called the “Radio-pilot project” aimed at covering 500 primary schools of Jaipur and Ajmer in order to teach Hindi language. GyanVani project was launched by IGNOU is offered in FM channels in 40 cities around the country for the purpose of educational development. EMPC is the nodal agency for implementing the project. The EMPC is currently studying the possibilities of creating a global Gyanvani. Interactive Radio Counselling is a recent conception in Indian Distance Education scheme. In this scheme various experts at AIR stations provide live Counselling across the country. They are conducted at 189 radio stations on Sundays for an hour. Reflecting on the Interactive Radio Counselling mechanism as adopted in IGNOU, S.S.Chaudhary. et.al reported that IRC was an effective input to accomplish course objectives. Again, B.Sukumar states that IRCs provide a major forum on which the students, especially from the remote areas can interact with the teaching end and can get their doubts clarified. The study revealed that even though IRC is well accepted by the students, there needs to be more attention given to its various aspects to make it really effective. Radio as an Information and communication technology is by far the most successful of all ICTs in India.

1.4.2. Television:
Experiment with television as a medium began very early in India. The major programmes of significance in this regard were Secondary school TV programme(October 1961), Delhi Agricultural Television Project: Krishi Darshan(26 Jan,1966), Satellite Instructional TV Experiment (1975), Indian National Satellite Project (15 Aug,1982), UGC’s Higher Educational Television Project (1984) and Gyan Darshan (10 Jan,2000).

2. COMPARATIVE ANALYSIS OF THESE TWO TECHNOLOGY
A relative analysis of the performances of Radio and Television would indicate the factors that can lead to the success and failures of various media in Developing countries. It has been noticed that the experiments conducted with the medium of radio have been far more successful than those conducted with the medium of Television. The reasons are not far to seek. The extent of penetration of Radio is far greater than that of TV. Even today the penetration of TV is as low as 80 per 1000 compared to the widespread. On the other hand radios are easily accessible and with the transistor revolution radio as a technology has become very cheap. Another factor working in favour of Radio, as a medium is the low capital investment and operating costs of radio broadcast technologies. Again learners can easily listen to radio programmes even while they are doing manual work. The ease with which it is accessible to the poor and rich alike makes it the most ideal medium for information dissemination. Sonvir Choudhary states in that there are groups recommending the use of TV due to its glamour value and those opposing it due to the doubts over its viability of its access. Thus there are major factors that have led to the relative success of a medium like radio over a medium like TV. A variety of constraints dog India’s efforts to deploy technology for education. Policy exists, as does government commitment. However, such policy and commitment is often lost on the road to implementation. Educational projects, set up by conventional governments as part of a broad educational agenda, tend to reflect the conventionalism of existing institutions with their hierarchical and bureaucratic systems of administration when the need is for creative and innovative management. Access and availability of technology also becomes patchy since a piecemeal rather than a co-ordinated effort by different implementing agencies is followed. Lack of stable electric power, non-existent or unreliable telecommunication lines and a mismatch between funding and actual needs all add to the problem. Sustainability is also a major obstacle, with many initiatives failing because donors have not anticipated the cost of maintenance and upgrading of technology and services. Central models of management and development that are linguistically and culturally relevant to local communities are next to impossible when projects are being implemented nationally or from state capitals in ways that fail to take local needs into consideration. The result is a constant tussle between local requirements and the need to develop local materials with the economies of scale that are possible through more centralised models.

CONCLUSION
A very large number of local and regional initiatives have failed to increase the knowledge base regarding what works and what doesn’t. There is not enough documentation and sharing of knowledge of interventions of ICT in education. The following suggestions and recommendations may be given for facilitating greater growth and adaptation of ICTs in Developing countries.

- In keeping with the pattern of the globalised economy, greater impetus should be given for the cooperation between the government and the private sector to adapt and disseminate new technology in the field of education.
- Tax rebates should be extended to private institutions engaged in the field of research on ICT adaptability in Distance Education.
• The government of these countries should invest at least a percentage of their GDP in research and adoption of new ICT.
• The Developed countries should accept it as their moral duty to transfer those ICT technologies to developing countries that can changes in the educational profile of these countries.
• While choosing between different ICTs, the criterion of positive end use effect should prevail above the aspects of Novelty and fashion.
• The governments of these countries should concentrate on building up the base of high speed data transfer by initiating projects like the Sankhya vahini.
• Venture capitalist projects should be encouraged to make break thorough in the field of ICTs for educational purposes.
• It is as important to empower people with technologies as to make technologies accessible to them. Access without empowerment will stunt the growth of technologies.

FUTURE SCOPE
India has the policy and technology to implement both small and large ICT interventions in education. What is missing and what fails is in the translation of policy and technology into good practice.

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