NEPAL GOVERNMENT ROLE ON INFORMATION TECHNOLOGY

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Abstract - The author believes that developing countries (DC), in particular Nepal, need to urgently develop a culturally appropriate national strategy if they wish information technology (IT) to have a positive impact on their overall socio-economic development. While countries like Singapore claim to have very successful national strategies, the long-term impact on the country's social development may have been over looked. Left unchecked the technological marketplace will impose a hard-to-reverse negative role on small countries like Nepal. This will make it increasingly difficult for Nepal to decide it is own long-term preferences for social and economic development. Put bluntly, these countries need to decide what they want from the global technology marketplace and then work out how they are going to achieve it. It is believed that hard technological determinism can only be countered by very real and well thought out national strategies. The paper argues that the national IT strategy will need to address the issues of resistance to change due to cultural, personal and infrastructure factors, be very culturally sensitive and, given the rate change of the technology, will need to be constructed as an evolving, and learning system. The first stage in the development of such a system is to design an appropriate forum for discussion, and a well-constituted and ongoing decision-making protocol. It seems appropriate that in countries with a less than thriving technology marketplace, it is incumbent on their Government to provide a lead in this complex undertaking.

Keywords - Information Technology, Government Role, Nepal, Development.

I. INTRODUCTION

This paper argues that Nepal needs to base its national information technology (IT) strategy on a much greater consideration of local cultural and social issues. The government has a major role to play if the country wants to stand in the information arena. Although information technology covers a wide range of technologies in general, I will use the abbreviation 'information technology' to refer to all computing and communication technologies.

Information technology (IT) - as a tool of socio-economic development- is a significant issue for developing countries (DCs) (Odedra, 1996). Through declining hardware costs and increasing benefits, IT has been spreading into developing countries. There is a rapid expansion in the use of IT in many sectors of the economy, particularly in public organizations. However, this usually occurs with external 'assistance'. As latecomers to the IT scene, developing countries face enormous difficulties - perhaps the most important being that they are becoming users of IT without building up the necessary infrastructure, planning and manpower to support it (Kirlidog, 1996).

Castells (1996) and others have also recognized IT as the most important factor separating the developing and developed countries. Countries are being encouraged to attract economic growth by entering the 'information age', and being able to supply or compete at the multinational level. Therefore, there is no wonder that many developing countries are trying to bridge the development gap by means of technology acquisition. However, as Madon (2000) points out, the rapid diffusion of IT in developing countries has not been accompanied by substantial developmental benefits. This does not mean that this technology must be discarded as a tool of development. There is no question as to whether IT is appropriate or not; it is a technology which cannot be ignored.

Sachs (2000) in his article "A new map of the world", published in the Economist in June of last year, highlighted that countries that do not keep up with IT often collapse and are unable to achieve social-economic growth. In addition, Sachs asserts that scientific and technological progress is desirable for a nation aiming to participate in the process of global integration. For developing countries, however, this can be problematic. Therefore, it is important for every developing country to have a national IT strategy as a foundation whereby the great potential of IT can be realised, development be promoted, technology be exploited and communication problems be alleviated. The government must play an important role, not only as a major user, but also through its other role as regulator, promoter and diffuser.

This paper is divided into six parts including the introduction. The second part attempts to explain the importance of information technology in the development process. The third part discusses the major issues of information technology in developing countries. The fourth section explores the role of government in developing countries, and the fifth part emphasizes the need for more research in this area. The final part concludes by discussing some of the key policy implications for IT acquisition, which developing countries such as Nepal will have to address in order to keep up with the information age.

II. IT AND DEVELOPMENT

There has been considerable debate over the definition of development over the past few decades. Madon (2000) asserts that 'modernization' was perhaps the earliest theoretical approach to development, which was linked to the idea of economic development. In early days, development was often perceived as progress, and it was assumed that developing countries were going to be able to participate in this progress if the benefits of scientific advances, technology and urban-industrial development were available to them. In today's world, development is often linked to 'modernization' and for developing countries modernization often represents the 'accessibility to new technology'.

There is no question why we need to acquire IT in developing countries. However, we need to know what role IT can play in the development processes of these countries. The far-reaching effects of IT are not only limited to industrial production in industrialized and newly developed countries. All economic sectors including agriculture, mining, banking, commerce, health-care, education, publishing, environment-management, energy conservation and transportation are becoming fast, flexible and information intensive (Hanna, 1995). If properly used in the developing countries, IT can be the main factor in increasing productivity in public administration, communications infrastructure, industry and agriculture (Chou et al. 1977, Avgerou 1996, Lind 1996, Oyomno 1996). Furthermore, many studies have already shown that IT can be useful for education purposes (Makau 1990, Grobler 1996), geographical applications (Madon, 1996), financial applications (Corfmat 1985, Bhatnagar 1996), health systems (Getao 1996, Braa 1996, Adam 1996, Madon 2000), water resources management (Kelsey, 1988), tourism and other sectors of the economy.

IT, computers in particular, can be used to handle large amounts of data, which national planning inevitably requires. They can be utilized to improve operational efficiency by reducing the time taken to process tasks such as billings, or collecting financial dues which would help increase government income from its various revenue generating agencies and departments. For example, in Nepal, to produce the first population census report in 1962, manually, took almost a decade to collect, compile, process and produce a report, whereas after the introduction of computers in the Census Department in 1971, it took only a year to publish the country's second census report (Pradhan, 1992).

One must remember that IT is not a panacea, and its application requires practice. The principals of IT may be almost universal; however, the applications of these principles are not. It is obvious that not all the problems of underdevelopment can be solved by IT. The majority of the population in developing countries will not benefit directly from it. Computers cannot feed and cure individuals, their power begins and ends with the use of information, and their usefulness and success depends on those who are capable of effectively diffusing the knowledge and services acquire via IT.

III. IT ISSUES IN DEVELOPING COUNTRIES

Landes (1998) point out that research and development efforts in information technologies have been concentrated in only a few developed countries. In these countries again, a handful of key IT companies control an overwhelming proportion of world's IT resources. These companies serve about three-quarters of the world's population; the specific conditions of IT in the developing countries are not subject to extensive research. Instead, there is a tendency to adopt models or results from developed countries. Efforts based on such assumption cannot be meaningful if they do not take account of local technological and cultural constraints. Again, the discussion of IT application in developing countries is not that simple. There is diversity between the developing countries as a group, and, for example, the status and potential for IT application in Singapore will be totally different to that of Nepal. One must remember that any discussion of technology acquisition by developing countries recognize that these countries as a group are quite heterogeneous (Kansal, 1997).

In Nepal, especially in the public sector, technologies come as a package with development projects from various donor agencies. These projects have primarily focused their activities on the development and delivery of specific outcomes, within specific time frames. Little or no provision has been made for building the technological capability of the recipient organizations to sustain the use of the new technology beyond the lives of the projects. Consequently, continuity has been provided through project renewals and extensions. However, repeated project renewals suggest a lack of institutional capacity to sustain the use of the new technology on internal resources. It also perpetuates dependency by these organizations on external resources over which they have no control; and on a technology they cannot support on their internal resources.

Actually in Nepal, the policy instruments and the relevant authoritative agencies are failing to guide and regulate the technology acquisition from both internal and external sources in a way to maximize the benefits and advantages of imported technologies for building up its technological capacity (Shrestha, 1989). The importation of technologies is operated in

a very liberal manner, without any serious attempts at learning and absorbing them. Similarly, the diffusion and commercialization of their technologies are practiced on an ad hoc basis (Shrestha, 1989).

In line with Mitroff and Linstones' (1993) multi perspective interpretation in their book 'The Unbounded Mind', we see the pattern of acquisition of IT as being influenced by a complex and dynamic interaction of forces – social, political, economic, cultural, and organizational as well as technological – and not a single factor or a static process. There is a need for multi-perspective research that comprises all vital aspects of introducing IT, namely the technical, the economic, the social, the cultural, the organizational and the political. Linstone (1984) highlights the need to incorporate the various stakeholders involved in a project studied so that the closest truth can be found. In order to obtain a variety of perspectives and identify the "missing issues' in the process of IT acquisition, it is our intention to discuss some of the factors which need to be considered in developing countries when adopting the technology from abroad.

Social issues: Probably the most important social impact of IT is on the labor market. Thereis no agreement about whether the number of jobs increases or decreases when IT is adopted, but there is a great deal of pessimism about it. It is clear that the characteristic of the workplace, and the required qualification and skills, will change. Some examples are given for and against in this discussion (Amstrong, 1988; Chepaitis, 1992). Some jobs require retraining, others, many of them unskilled, would disappear or would be replaced, often by skilled or highly qualified jobs. In developed countries, technology is often a cheaperalternative to personnel. The opposite holds in developing countries. The question of introducing IT in countries where the unemployment rate is increasing each year becomes important. Despite the unemployment rate exceeding 10 percent in Nepal, people with computer literacy could find a job relatively quickly, and the job market is currently far from being saturated with computer specialists.

As Madon (1997) highlights, one of the most important problems of the developing countries is the inadequacy of trained personnel, both qualitatively and quantitatively. On top of that, the migration of highly qualified people from developing countries has created a big gap in skilled human resources. Those with university degrees in computer science and IT are even more prone to the brain drain than others. High income, better living standards and a freer political and social environment in the Western countries, often prove too attractive for high calibre IT people.

Economic issues: Two economic aspects of technology acquisition are important to consider: funds for initial investment and return on this investment. In low and middle-incomecountries, the funds available are often not sufficient to buy expensive technology. External sources could help here. If you look at the government sector in Nepal, most of the technologies in use are donor given, and problems are often encountered after the project period. It is not guaranteed that investing foreign currency on new technology will bring economic benefit to the country, however it could push the country into a debt loop.

Political issues: Technology acquisition raises a number of political questions. The first relates to the dependence of the receiving nation on the supplying one. It is clear that a technological dependence could become a political one. It is the responsibility of the government to select carefully the country from which acquisition could be made without any political problems in future. The second question relates to the possible transfer of political power from political elites to the technical specialists. This problem is more prominent in computer-based technologies because these technologies are directly related with retrieval and processing of data and information. Those at the management level are mainly from nontechnical backgrounds, as a result of which there is always a tension between these two groups. The third question concerns the selection of countries to which certain technology could be transferred.

Cultural issues: IT, particularly the computer, is not culturally neutral: it often reflects the nature of the country that developed or manufactured it. One of the most distinct problems of the developing countries in fostering IT is their cultural difference from Western societies where individualism and rationalism are accepted as the higher values of life. That may not be the case with the developing countries, particularly from the point of view of individualism.

Implementation of a new technology does not end with installation of the machinery and explanation of how to use it (Fleron, 1977). It should be accompanied, therefore, by transfers in education, organization, administration, employment strategy, and research etc. The new technology must be accepted by the receiving society. Therefore, the set of values introduced by and indispensable for the use of the new technology must not contradictory to the values accepted for the receiving society (Lind, 1991). Nepalese social practices and cultural values differ markedly from Western practices, and as a result, are likely to impact Nepalese user's attitudes towards computers. Some of the common practices and values are described below:

As Mallling (2000) rightly pointed out in his paper 'Information Systems and Human Activity in Nepal' that Nepal has a hierarchical society and is built upon traditional criteria such as kinship, residence, age and sex, but has become merged with the top-down authority. Powerful top down authority operates in the line of strict task division. In a broad sense, juniors execute while seniors supervise and delegate. In the hierarchical structure, staff at the higher levels hardly work at all, or even avoid work altogether, as work is perceived as signifying low status (Bista, 1994).

Within Nepalese work places, most practices function on the basis of communalism where individual initiatives are exceptional. The importance of social interaction in the workplace greatly exceeds the importance of solitary technology interaction. Work planning, serving clients or supervising, mainly involves personal meetings, visits, phone conversations, and discussions. There is no tradition of using written language for internal communication (Malling, 2000). Hence, the influence of oral culture may render certain computer applications such as in-house electronic communication difficult to implement. Therefore, it is not surprising to see that the communication via IT and computers faces strong resistance in organizations. In general, information is seen as a source of power in Nepal, where lower status employees offer various services e.g. information, to supervisors in return for their job protection (Bista, 1994). This attitude of people is also mentioned is Malling's paper.

Information is frequently seen as a resource, as a commodity, and you only give away if you get something back. The safest way to secure full right over the information is naturally not to externalize it at all. The moment that it is put on paper, it is possible for another to get hold of it. Storing it on IT is even more chancy, as copying it is that much easier. Putting the information on an intranet, or even the Internet, causes it to lose its market value as it becomes accessible to the public (p.16)

Managerial and organizational issues of the receiving country are also important. As Delmore (1982) noted, 'No transfer can succeed without a minimum of infrastructure and organization in the host country'. An understanding of the potential influences of organizational structures and control is a must, especially if the acquisition of new technology is aimed to be effective.

IV. THE ROLE OF GOVERNMENT

IT application in developing countries is not a recent phenomenon. The role of government in relation to IT use and development dates back to 1960s when most of the developing from Asia, Africa and Caribbean adopted the computerization as their national strategy (Han, 1991). The early IT-based systems were all in the public sector introduced as a package project from the donor agencies and were based on the hardware and software designed by and for the developed countries (Han, 1991). Considering the fact that such centralized IT system requires administrative and support infrastructure, it was maintained within a government environment.

However, with the availability of cheaper but more powerful microprocessor combined with the growing number of awareness of limitations of the large-scale systems, the trend of using large-scale systems has changed. Computers were now used at individual level within government and private sectors and as well as in various sectors of the economy such as agriculture, rural development, meteorological forecasting, health services and so on (BOSTID, 1986, 1988 and United Nations, 1985). With the increased application and diffusion of IT in developing countries, problems associated with its use also increased. As mentioned in previous sections that the major issues related to this are: lack of appropriate technology, qualified professionals, absence of economic incentives and infrastructures and lack of explicit IT policy. It becomes necessary to build the infrastructure to support the development and use of IT, including the facilities for training and communication infrastructure, provision for maintenance facilities for computer hardware and software and organizational mechanism for procurement, development and application of the technology. These conditions are not only required at one sector or one organization, but it is necessary to develop this capability at national level. Accordingly, the government in the developing countries has a major role to play if the country is to stand in this global information arena. The IT has to treated as a priority segment, which will improve the existing segments of the economy (Bowonder, et al., 1993). It becomes necessary for each country to have an IT strategy. For example, Japan was one of the first countries to have a national level strategy for the informationalization of the society (Motohashi, 1986). This policy envisages promotion of IT development, promotion of software development and acquisition and promotion of education and training, promotion of database establishment and development of complete information providing services, and international cooperation. The information technology can be viewed as an important infrastructure for the growth of all economic sectors and as an industry in its own right (Hanna, 1994). Governments can play a catalytic role in developing this infrastructure and stimulating the effective use of these infrastructures in support of nation-wide competitiveness.

Ein-Dor, et al. (1997) argue that not only are small

countries not disadvantaged by their size, but they may actually have an advantage over larger competitors with regards to information technology industries. As an industry, information technology is the largest, fastest growing and the most profitable industry in the world today (Hanna, 1994). India had already enjoyed competitive advantage in the fastest growing segment of the industry, namely, software (Hanna, 1994). Few of the Nepalese IT companies have already shown their capabilities in the international market providing their services. With good infrastructure and skilled human resources, a small country can also develop its IT sector - provided there is a government policy to promote IT production directly, to support IT industry R&D, and in education policies, designed to provide appropriately trained labor pools.

In a small landlocked country like Nepal where the major part of the country consists of high mountains and rolling hills - and has an ethnically complex society – there have been major obstructions for information technology development and its wider application. Yet, IT is of critical importance for a number of reasons for Nepal: it makes it easier and more plausible for a small land-locked country to acquire a global perspective through direct links with the rest of the world; and it is an essential part of restructuring, and moving upstream into high value-added, highly skilled activities. IT use, if planned, developed and managed properly can bring about greater efficiency in organizational operations, a better working environment, an effective decision-making process, better product quality and better quality of life for people generally. It is therefore important for developing countries to put more effort into finding out where they might have gone wrong in applying this technology. Where do the problems really lie and what can be done about them? The developing countries need to learn – by themselves and within their own environment – ways in which IT can be applied to serve their own needs.

The Nepalese Government has initiated a number of efforts to give a direction to IT application and development in the country. This includes a plan to establish a national computer-training program; to encourage research activities in software development; to create a national information bank; and develop a networking system to disseminate and collect data and information. The highly trained personnel in the public and private sectors have been organizing themselves into a profession, the most notable effort being the 1992 establishment of a Computer Associations of Nepal (CAN) and the 1997 establishment of the Internet Users Group. The emergence of an indigenous computer profession may be seen as a development likely to reduce Nepal's reliance on foreign experts, and expand the knowledge base beyond a small group of private computer vendors. The important question at this stage is: how successful have the government and the private sectors been in achieving their goals of developing and providing IT services across the various sectors of the economy?

One major goal that has been achieved, by the Nepalese government, was the introduction of the Information Technology Policy, B.S 2057 (2000). The aspiration of this IT policy is to place Nepal on the global map of information technology within the next five years. The policy looks good on paper, with clear objectives to make IT accessible to the general public; to build a knowledge-based society; and to establish knowledge-based industries. There are well spell-out strategies and action plans for participation of private sector in infrastructure development, human resource development, information dissemination and promotion of E-commerce. The policy also clearly outlines the facilities necessary for the development of the IT sector including a one percent customs duty levied on hardware, software and all kinds of computer spare parts imported by education institutions related to IT; and the establishment of a venture capital fund to attract private sector investment – amounts derived from this fund would then be matched by the Nepalese government. The policy also calls for the formation of the National Information Technology Development Council under the chairmanship of the Prime Minister; the National Information Technology Co-ordination Committee; and the National Information Technology Center and Information Technology Park Development.

Yet, while this policy appears sound on paper, there are still many practical problems however. First and foremost, the policy (introduced one and half years ago) is still yet to be implemented. Institutions like National IT Council and IT Centre remain to be set up. Furthermore, despite the provisions and promises, the private sector is still hesitant to take the government at face value. Many IT related business people found the government role to be more of a hindrance than a catalyst. There have already been a number of forums - such as International Conference in IT held at Kathmandu, 29-30 November, 2001 and Info-Tech 2002, Jan 25-29, 2002 - where these issues have been raised, and have subsequently increased the concerns over the implementation of the ambitious IT policy among both IT professionals, and also the general public. The formulation of an IT policy is a positive step towards the development of a robust IT sector in Nepal, however the failure to fully implement that policy has been a serious concern.

CONCLUSION

Information technologies are the product of developed countries, and to make that technology suitable for developing countries, there should be an effort to build a capacity to recognize the importance of implementing IT according to local development needs. It is not what technology, but what strategies

can be adopted to lead an appropriate information system in a country. It is precisely at such moments that the research can make a valuable contribution to a particular nation by bringing to the fore the relevant issues to assist in such strategies. Each country is unique. Appropriate information technology at the level of the policy maker means that the information technology provides the means for or supports activities, which in national terms are seen as desirable. Formulating an appropriate information strategy, which is favourable and supportive to development, a country can best use information technology for overall progress.

Furthermore, the problem is not about getting technology in the developing countries. The major problem arises when the time comes for managing the information technology in a particular environment. There is no single best procedure for managing information technology, since it depends on external social, economic, political and cultural factors that vary from one country to another, as well as on internal forces like organizational culture, and on skills that vary from one organization to another even within the same industry in the same country (Bjorn-Andersen, et. al., 1990). There is a great need of academic research in the field of IT in developing countries and the role of government in developing national capabilities.

It is clear that for the developing countries, simply trying to follow another country's model is not likely to work very well at all. For example, a country without a large pool of software professionals is highly unlikely to duplicate India's software export success. However, lessons can be learned from India on how to plan a long-term vision for developing and retaining IT professionals for future use. Many studies have pointed out the importance of developing national capabilities such as human resources, high-quality and low-cost telecommunications networks, and supportive institutional and financial development. Therefore, if Nepal wants to gain a place on the global IT map, the country will need to develop a strong, coherent, well designed and comprehensive national strategy with specific programs, policies and institutions to accumulate skills and build markets. Although Nepal at this stage cannot think of becoming self-reliant in this sector, there will need to be a clear vision of local need, and the country must not become a 'dumping ground' for other nations' obsolete technologies. Therefore, the government will need to require that technologies be viewed with the Nepalese context clearly in mind.

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