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A Framework for Penetration of Information Communications Technology into Developing Countries for Manpower and Economic Development

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Abstract: Information and Communication Technology (ICT), is fast becoming the principal agent and infrastructure for globalization and thus, has become a veritable tool for national development in many of the advanced nations. In these nations, human knowledge and skill have witnessed tremendous growth through the use of ICT. Unlike the Developing Countries (DCs) where literacy, poverty, diseases and in fact low quality of life are the order of the day, the advanced nations have been able to overcome these problems through the adoption and deployment of technologies. The great difference between the DCs and advanced nations lies in manpower development. Knowledge has always been prime mover of prosperity. A knowledge society is the one with sure foundation for development, thus, we propose this framework as a simple way through which the DCs can quickly adopt and deploy ICT as instrument of manpower development and also as an infrastructure for national development. Our proposal includes government contributions and the benefits for both government and the citizens.

Key words: Computer, infrastructure, knowledge, growth

INTRODUCTION

Knowledge plays an important role in any organization or society. Knowledge can be acquired through appropriate and first-hand information. The acquisition level of information is now a barometer by which to measure the levels of productivity and cultures for individuals and organizations^[1]. Thus, knowledge and technologies are ever increasingly designed to produce, process and efficiently utilize valuable information.

Knowledge is the full utilization of information and data, coupled with the potential of people's skills, competencies, ideas, intuitions, commitments and motivations. Knowledge is stored in individual brain or encoded in organizational processes, documents, productions, services, facilities and systems^[2].

It is a person's range of information. It can be described as information that has a use or purpose. The abilities of manpower to create, share and utilize knowledge are one of the most important elements in sustaining competitive edge. Knowledge practically plays an important role in manpower development.

Knowledge engineering is defined as the engineering discipline that involves integrating knowledge into computer systems in order to solve complex problems normally requiring a high level of expertise. It is a general term for the processes involved in building expert systems.

Knowledge management, on other hand, is converting intellectual assets of workers and staff members in the organization into higher productive forces-competition power and new value. Knowledge management has become a powerful tool for promoting innovation and realizing reengineering the various walks of life^[3].

Knowledge management is the framework for synergizing the processes of knowledge production, sharing and application for maximum effectiveness and efficiency.

The main technology available for man power development in developing countries is ICT. The ability of people to adopt and adapt these technologies seems to be one of the principal determinants for their prospects for economic, social and political development in general.

ICT have great impact on productivity, product differentiation, competitive advantage and effective communication. Due to these, developing countries should use ICT for immense man-power development.

ICT is a tool for knowledge engineering in manpower development. The application of ICT enlarges the scope of knowledge acquisition. It raises the speed of acquisition and reduces the cost. It is impossible to accomplish such important tasks by using human brains only, in the modern society in which knowledge changes with each passing day. It will be possible to link closely

knowledge sources and knowledge workers (man-power) by computer networks.

ICT incorporates two main technologies, namely computers and telecommunications. It is the technology of collecting, manipulating, storing and communicating data and information. Today, the word data encompasses voice, text, numbers, graphics, images, video and multimedia. Computers process data and data refer to raw facts that are fed into a computer as input. Data, when processed, become information. Computer systems are made up of two major components namely Hardware and software. Hardware is the physical components of the computer while software refers to the set of instructions that enable the computer to process data.

Telecommunications is the other part of ICT. It is a newer and more powerful form of communication. It is the technology that is used to bring about the communication of voice and data signals over some geographical distance. The primary purpose of computer systems in most businesses today is to transform data into information that can be used by people to make decisions, sell products and perform a variety of other activities. People constitute the most important component of the computer system. People operate the computer hardware, they create and use the software and face ethical issues and decisions regarding the use of information and communications technology.

In this study, we are set to propose a framework based on evaluation of prevailing orientation among different categories of prospective users of ICT, for ICT penetration to the rural communities in developing countries to empower the grass root societies for sustainable economic development. The objective of this study is to deploy capacity building through ICT to reduce poverty level and close the inequality gap between the poor and the rich in developing states.

MANPOWER DEVELOPMENT AND ICT IN DEVELOPING COUNTRIES

In the context of developing countries, ICT is seen as one of the most significant forces of modernization. But, there is the misconception in the minds of common people that the increased application of ICT may replace the manpower, resulting in loss of employment. For many people, there is gross under-utilization of computers. Some people do not go beyond using the standard application packages. Computers are being used as a personal tool for a few officers rather than a tool to improve system performance. One can say then that there is Digital Divide in these countries.

Digital Divide is a societal divide in which there is no equitable usage of ICT tools. It is a gap between people and communities who can make effective use of

ICT and those who cannot. Digital Divide framework provides a poor roadmap for using technology to promote social development since it overemphasizes the importance of the physical presence of computers and connectivity to the exclusion of the factors that allow people to use ICT for meaningful ends^[4]. Digital Divide comprises of barriers of afford ability of computers (both hardware and software), differential access to broadband telecommunications, differences in knowledge and skills in using computers and government controls.

For manpower development in developing countries, provision of computers and internet is not the most important thing, but people's ability to use ICT for productive knowledge access, creation and usage. Hence we say Knowledge Society is very important for development. Knowledge is the primary resource for development. Efficient utilization of knowledge can bring about wealth for a nation. A Knowledge society nation is judged by the way the country effectively deals with knowledge creation, managing, sharing and knowledge development. A Knowledge society is knowledge driven. It is one of the fundamental foundations for the development of a nation.

ICT is the key driver of knowledge society and it is a means to view, manage and use knowledge and information. ICT can be used for wealth creation in developing countries. For developing countries to succeed, their human resources in communities and organizations have to be knowledge-based. They need to share and apply knowledge for their empowerment, for greater effectiveness and for sustainable and equitable development. There should be meaningful access to ICT which would be more than just providing computers and internet connections; but, access to ICT should encompass additional resources that would allow the manpower to use the technology very well. There is a distinct need to re-orient the employees so as to meet the challenge of the future. Training needs to be conducted towards the use of ICT tools. Training can play an important role in improving the skills and quality of the manpower services.

FRAMEWORK FOR KNOWLEDGE MANAGEMENT IN MAN-POWER DEVELOPMENT ON ICT

The framework will be fragmented into the following sections: Mission Critical Statement on ICT Deployment which should contain the policy of the government on ICT development and implementation, the next section is the short term goal followed by long term goal for implementation both the short and long term goals are contained in the mission policy statement. This framework conforms to Nair and Prasad^[5].

Mission critical statement on ICT deployment: The political powers of DCs must understand the enormous potentials of ICT not only as an infrastructure for information dissemination and gainful employment for the people but much more significantly a means of improving and enhancing citizens' quality of life through poverty eradication programme, better health, quality education, socio-political interaction etc.

The following should be embedded in the mission critical statement for ICT implementation:

- Establishment of campaign committee that will disseminate information on the benefits and use of ICT through presentations, publications, workshops/seminars and conferences at the grass root level and among the elites.
- The use of ICT in all sectors of the economy as a tool for enhancing productivity, efficiency and optimum utilization of resources and to take advantage of employment capacity of ICT.
- Provision of ICT infrastructure which should include: high speed broadband communication backbone, computer systems as nodes, access network at the grass root (local communities) for teaching and training purpose as well as a means of information disseminating information between the government and the people on government activities.
- Evolving a conducive atmosphere for the growth of ICT companies both indigenous and from abroad which will allow fair competition between the local software products and the foreign ones but some incentive should be given to the local products which will encourage home made soft wares.
- The government should be prepared to develop human resources in ICT almost at free cost to prepare for effective take off and to empower the through ICT application.

Short term goal: Knowledge has been the pivotal issue on which development of any person or community hinged. An uninformed society will lead to a state poverty in the midst of plenty. Developing nations are highly characterized by unemployment and poverty. To develop a framework for man-power-development for sustainable economic growth, which will meet the needs of these nations in ICT, such framework should be cost effective i.e. human intensive for effective take-off. ICT is the principal agent and infrastructure of globalization and hence often a cause of significant disparities between the advanced economics and developing economies.

The varying ability of different nations to adapt this technology seems to be one of the principal determinants

for their economic survival and social-political growth, in general the welfare of the citizens. The resultant effect of this is the digital divide among nations^[6].

The developing nations leaders are often confused about policies to adopt in confronting digital divide and what should be given the highest priority. First, there is the need to close the gap between their poor economies and the advanced economies so that their national Gross Domestic Product (GDP) can improve which will allow them a fair competition with weather nations in the global market. Secondly the gap between the rich and the poor within the poor economy deserves urgent attention, if the first weakness of developing economies will be overcome.

There is the need for developing nations to involve Knowledge Society (KS). Knowledge is been known to be prime mover for prosperity, therefore, KS is a basic for development of any nation^[7]. To evolve KS in ICT in developing nations, the following strategies should be put in place: the political power should identify unemployed university/polytechnic graduates that can be trained on the use of ICT. The fact that, they are well read makes it easy for them to grasp the basics of ICT.

The first six months should expose them to the general idea of ICT and the use of common software. The next six months will expose them to different areas of specialization. This will include software and hardware. The science-oriented graduate should be encouraged to take on software development and hardware maintenance. The other trainees may want to consolidate their ability to use software.

After the training, six months of knowledge consolidation should be given, where the entire trained candidate will get themselves on the systems for practical purpose. The six months will allow them to be well grounded in their field of specialization within ICT domain.

In parallel with the activity above, the government will need to provide Knowledge Market in several strategic centers where young school leavers will have access to it through the whole nation. It is important to note meaningful access to ICT encompasses more than merely providing computer systems and Internet connections. Rather, access to ICT is embedded in a complex array of factors containing physical, digital, human, cultural and social resources and relationships. The knowledge market centers should consider content and language, literacy and communities structures and social resources where centers are based. The trained candidates are recruited from different areas of ICT as staff of the centre. These people become resource persons or permanent staff of the market. The use of

primary schools/secondary school and public buildings in the community for knowledge market centers is necessary for cost effectiveness and nearness to the grass-root. For effective and proper take off, ICT equipment especially computer systems should be subsidized so that low income earners and young school leavers can acquire one set for self development purpose.

These trained people should be encouraged to form teams that can start ICT-based small- scale business. The government may set the conditions and loan them the initial capital for the business, which they are expected to pay back at a set period. This will transform the society and create wealth for the coming generation.

The following policy should back up the short term goal:

- Personal Computer penetration into the community to reasonable degree to be determined by the political power. This will be encouraged by subsidy for all ICT materials and consumables.
- Establish a functional unit that will propagate and promote ICT awareness and the benefits to individuals and the state.
- Curriculum review in all phases of education to reflect ICT teachings and usages especially in the tertiary system.
- Integration of ICT into all government activities and use it for information dissemination channel.

Long term goals:

- Having the plan of evolving ICT corporate bodies within a time frame with the plan of exporting soft wares as earning for the government.
- Projecting a period of time in which, not less than 75% of the population will be ICT corporates which will reduce paper work in public establishment and private sector.
- Determine a specified time when ICT will become an interment that will project the good image of the country by letting the whole world to know all the activities of the government through the Internet.
- As soon as local soft wares are available, the government should compel all government agencies and establishments and also advice private sector to make use of them, this is to encourage local production as well as give them the opportunity to improve their products.

BENEFITS OF THIS FRAMEWORK FOR DEVELOPING COUNTRIES ECONOMY

This framework, if adopted and applied vigorously, can result in the following:

- Capacity building by transforming the society of ignorant people to a knowledge society with skills for wealth creation for the younger generation. It is clear fact that knowledge and wealth are good companions. The main dominant factor for poverty eradication in DCs in the 21st century is knowledge society especially in ICT. The factors that influence production in the 20th century were land, capital and labour of which capital was a dominant factor but in the new millennium the emphasis is rather knowledge than capital.
- Reduction in crime rate in the developing countries since there will be poverty reduction and the idle youth can find meaningful employment through ICT. Their enrolment at vocational centre or knowledge market will occupy them and keep them busy. The knowledge acquired should also be transformed to productive knowledge by gainful employment.
- Improvement in the quality of services offered in the economy. This is clearly shown by the Developed nations in their study have use ICT to develop and change from traditional way of business transaction to a modern way of business operation. For example, the use of Automated Teller Machines (ATMs) in banking operations has greatly improved the quality of service offered to customer. If ICT is carefully imbibed and deployed in DCs so that it penetrate the rural communities, it will act as a catalyst for business growth and development and this will result in better standard of living.
- Penetration of ICT into the grassroots and elementary schools that will inculcate ICT awareness into the younger generations thereby having the advantage of detecting talents and gifts in ICT early. Early training of the younger generations will result in specialists in ICT software and hardware development and expertise in other areas of the economy.
- In the long-run, it will affect Gross Domestic Product as quality software and hardware will be exported to other nations and the small scale ICT business are growing up to be ICT companies that can be reckoned with.

CONCLUSIONS

Next to natural resources in any community are the human resources that are available there. The implementation of ICT will require a level of commitment from the government and individual in developing nations. These constraints should not be allowed to frustrate the benefits that will accrue to them through ICT.

Manpower development in and through ICT will go a long way to reduce the compounded problem in which many of the DCs have found themselves.

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