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Digital Divide: Exploring National and International Approaches to Bridge the Digital Divide and Formulating a Strategic Model That Can Be Implemented in Developing Countries

Abstract:

Information and communication technology (ICT) continues to have a significant impact on the lives of people and the global economy and also gives rise to a host of important issues. One major unanswered question at the national and international level is whether the use of information technologies leads to increasing disparities within and among developing countries.

This paper reviews scholarly published books, articles, newspapers, journals and conference proceedings that address the issues related to digital divide. The research focus includes exploring few contemporary approaches at national and international level to address the issues of the digital divide. Based on the reviews and observations of several literatures, recent approaches at national and international levels, news, and research findings, I have formulated a model that discusses and recommends possible strategies that can be implemented in developing countries to reverse the widening gap of digital divide.

Digital Divide: Exploring National and International Approaches to Bridge the Digital Divide and Formulating a Strategic Model That Can Be Implemented in Developing Countries

I. Introduction

Information technology (IT) continues to have a significant impact on the lives of people and the global economy and also gives rise to a host of important issues. One major unanswered question at the national and international level is whether the use of information technologies leads to increasing disparities within and among developing countries. A major gap has always existed between affluent people living in developed societies with an access to modern information technology and underprivileged people living in many parts rural communities in underdeveloped countries. Even today, an unequal adoption of technology excludes many from harvesting the fruits of the digital economy. There is a significant divide between those who can effectively use new information and communication tools, such as the Internet, and those who cannot. While a consensus does not exist on the extent of the divide (and whether the divide is growing or narrowing) in developed countries, researchers are nearly unanimous in acknowledging that some form of divide exists at present in developing countries.

Information and communication technology (ICT) can empower people, benefit businesses and individual and virtually link people around the world to share their views, ideas, and innovations. It can enable and assure sustained economic growth, better public welfare, and stronger social cohesion and democratic forms of government. The heightening process of globalization and the emerging IT revolution is rapidly transforming our lives and business practices. As the IT innovation continues to grow, it is important that steps be taken to help bridge the digital divide that has been emerging. There must be some process in place

to grant all societies (rich or poor) and individuals equal access to the opportunities that have arisen as a direct result of these technological achievements.

Digital Divide

The term "digital divide" refers to the gap between individuals, households, businesses and geographic areas at different socio-economic levels with regard to the level of opportunity to access information and communication technologies (ICTs) as well as their use of the Internet. People living in urban areas and developed communities have the best access to the fastest computers, best telephone services, competitive ISP providers, and a wealth of content and training relevant to their lives. On the other hand, people living in rural communities have limited access or no access at all to these technologies. The real gap between these two groups of people is called the " digital divide". To better understand the complex issues of the digital divide, one should review a report on "Spanning the Digital Divide" prepared by Bridges.org that identifies a host of global issues and concerns, causing factors, and several dimensions of digital divide. The report presents a detailed study of current research into digital divides within and between countries, including a brief overview, detailed statistics on divisions between countries, socio-economic divisions within countries, and the potential future of the digital divide. (Falling Through the Net, 2001; Peters, 2001; US Chambers of Commerce, 2001)

II. National and International Approaches

There are many challenges faced by governments, political leaders, and business entrepreneurs around the world. Governments, industries, non-government organizations and policy makers have made little progress in expanding Internet connectivity. Those who support the Internet's power as a medium uniquely suited to building open societies must

study what can be done to make Internet access widely available and affordable to the most disadvantaged communities and individuals. This paper reviews several literatures dealing with contemporary approaches to address the emerging issues of digital divide at national and international levels.

A. National Level

This section highlights some of the innovative approaches that are underway in various countries at the national level, which provides insight to leaders of developing countries on how to bridge the digital divide at the national level. Former president Bill Clinton allocated millions of dollars to ensure that every American would have the access to the Internet and best education, especially in poor and underdeveloped areas (Barshefsky, 2001). The United Kingdom leases 100,000 discounted computers to underprivileged families. In Australia, there is collaboration between trade unions and telecommunication companies to provide unionists with inexpensive home computers and Internet access. Hong Kong already established grants for schools to buy computers and train their teachers in the field of information technology (Jarrett, 2000). The Egyptian government has also taken the initiative in bridging the digital divide (Digital Divide, 2000). Most of these governments and policy makers are working to establish a better regulatory framework, provide better education and life-long learning opportunities, train their workforce, provide equal access to deserving and poor families, and offer better job opportunities.

A report on "Spanning the Digital Divide" prepared by Bridges.org suggests three main approaches to the problems of digital divide. First, the report highlights in-depth studies and recommendations that have been undertaken by major players of the digital economy to assess the country's e-readiness to integrate technology, e-commerce, and other business processes.

Second, it emphasizes numerous initiatives from private industries that focus on–the-ground efforts to the bridge divide. Third, the report identifies government initiatives to reform the Internet and technology policies. (Peters, 2001)

B. International Level

International non-government agencies such as UNDP, World Bank, Asian Development Bank and local governments of grant receiving countries are working hard to establish a global framework to deal with emerging issues of digital divide due to the new Internet economy. Several governments are initiating strategies to deal with these issues. Yoshiro Mori, Prime Minister of Japan, has pledged $ 15 billion in aid to developing countries to help bridge the gap between rich and poor. He emphasizes training engineers and IT planners, and building IT infrastructures and communication networks in many developing countries (Oyama, 2000). The Association of South East Asian Nations (ASEAN) has formed an e-Task Force to formulate a broad and comprehensive action plan for Southeast Asia. This e-Task Force represents members from both public and private sectors and works collaboratively to bridge the digital divide involving wide cross section of South Asians, including those in rural communities, small industries, schools, and civil servants (Romulo, 2000).

The International Telecommunication Union (ITU), Geneva, has funded a multi-million dollar project called Training Centres Initiative for Developing Countries (ITCI-DC). This project's purpose is to close the digital divide in developing countries by establishing training initiatives in more than 40 countries. This initiative from ITU is a tangible contribution to sustainable development in a partnership approach (ITU, 2001).

Mr. Kofi Annan, UNDP, has established a number of projects to help developing countries. He emphasizes that " information technologies can give developing countries the chance to leapfrog some of the long and painful stages of development that other countries have had to go through" (India: ILO concern, 2001; Annan, 2001). Most of the international organizations such as World Bank, IMF, UNDP, and WHO are implementing a number of initiatives in many developing countries to reduce the gap in digital divide by sending volunteers, training people, and providing loans and grants to internet and information technology related projects in developing countries (India: ILO concern, 2001). The Okinawa charter of the Global Information Society continues by committing the G8 leaders to establish a digital opportunity Taskforce to help bridge the digital divide (Kyushu-Okinawa summit meeting, 2000). The Global Education Partnership is an ideal example of an organization acting as a role model to help bridge the digital divide (Global Education Partnership, 2001).

Also, there are few individuals such as M.S. Swaminathan, a prize winning scientist, Roger Harris, and Iqbal Quadir, who have taken extra steps to bridge the divide by donating capital, implementing theory into practices, and developing affordable technologies for the poor (Ghahremani, 2001). A good example from the industries is Hewlett-Packard's (HP) global approach through its Digital Village program. HP works with local partners, including schools, universities, government agencies, community service organizations, nonprofits, and small businesses, to implement and train local people in new technologies (Alto, 2001). Also free IT training offered to deserving people by some organizations such as Cyperlearning would one of the ideal approaches to address the issues of digital divide. (www.cyberlearning.org, 2001)

Further, Prof. Pippa Norris, an author of many books on this subject suggests a theoretical framework, the Internet Engagement Model. In this model she states that the new technology can be understood as being the product of resources (time and money), motivation (interest and confidence), and the structure of opportunities (such as how social networks and political actors use the Internet). She characterizes the global divide as inequalities of Internet access between countries; the social divide as inequalities between groups within societies; and the democratic divide as disparities between those online who do, or do not, use political resources on the Internet (Norris, 2001). In her book, she also presents several comparative frameworks and research strategies by focusing upon democratic states sharing similar economic and political backgrounds, and comparing advanced post-industrial (OECD) societies (Norris, 2001). Some of her collection of theories such as on democratization, global e-government, and social stratification in a digital network can serve as guidelines for many countries that are attempting to evaluate their policy options for reducing the digital divide.

III. Strategic Model and Recommended Solutions

In this paper, I have developed a model (figure1.1) that reflects the issues in digital divide of the developing countries in South Asia, such as Nepal, Pakistan, India, Sri Lanka, and Bangladesh by considering the local context at the micro level. Based on literature reviews and research findings, this model recommends that developing countries should coordinate, collaborate, and partner with four principal players--government, university, industry, and non-government organization (GUIN) – to develop bottom-up initiatives, and reform in IT policies. Developing countries planning to bridge the digital divide must take two immediate actions: --

a. **Development of ICT Policies:** Define and develop new ICT policies that comprise the common interests of these players. While developing ICT policies, the decision makers must reform existing policies to consider the views of all the players. They must make sure new ICT policies adequately address other aspects of development policies such as in education, health, transportation, foreign investment, government attitudes and leadership; employment, and the economy of the country. Most ICT policies in developing countries are either outdated or copied from highly developed countries and they fail to meet the local requirements (perspectives of local stakeholders) where the policies are implemented.

b. **Execution of ICT Policies:** In addition, the policies should be implemented at ground level of playing fields. Most policies in developing countries are made at the macro level and have never been implemented with proper actions. Once the ICT policies are developed, they must be executed at the micro levels by rigorously embracing democratic management principles that enforce the players to adhere within the boundaries of ethical responsibility, accountability, and integrity.

The players' primary task is to share knowledge and best practices to develop better and inexpensive multimedia systems that integrate the geography, the economy, and the language. The collaborative efforts of these players are the critical success factors to build a global digital network, develop ICT infrastructures, and create a faster access to all, which contribute to narrow the digital, divide. These players must be committed to innovate and update their countries' educational systems and infrastructure. Individual initiatives to tackle the complex problems of the digital divide are currently beyond the scope of their abilities and efforts. Therefore, sharing resources and experiences among the GUIN is vital to address these issues. Several good examples with useful resources that address these issues through

collaboration and partnering can be available at Digital Divide Network site of Benton foundation. (Twist, 2001)

Governments, along with other partners, should develop a curriculum that reaches deserving communities to teach, train, and conduct seminars in Internet technology. Technology driven teaching and learning opportunities in the country benefits many deserving people and minority communities. Minority communities will come to understand the impact of IT implication and make better decisions in their lives. A proven legal and regulatory framework is needed at the national and international level that helps to encourage e-commerce, build a model marketplace for information goods and services, produce more human capabilities, and encourage e-government leadership.

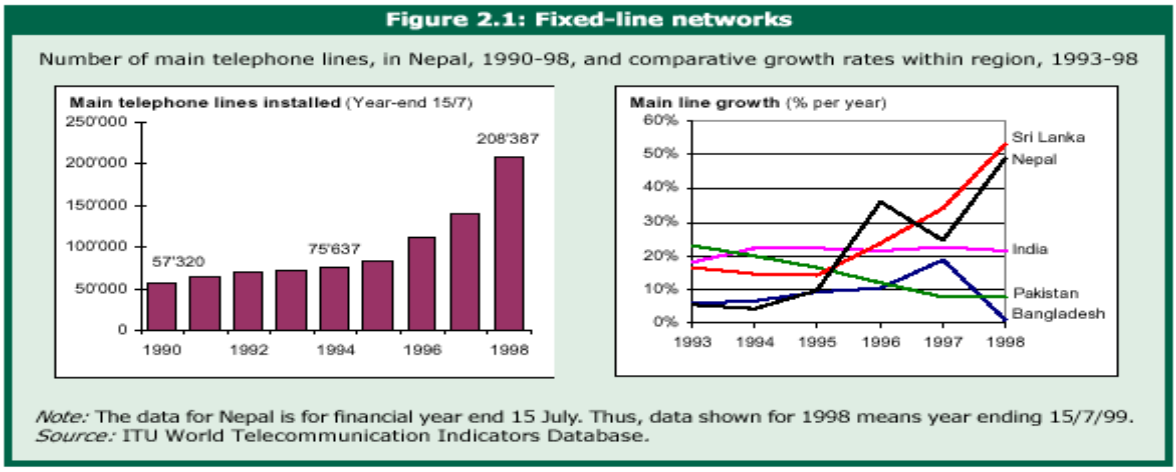
Brain drain -- people migrating to developed societies or immigrating to developed countries for better job opportunities, life-styles, and business opportunities--among young generations is a huge problem in developing countries. In order to reverse the brain drain, governments must create favorable business environment where expatriates can easily set up business ventures; invest capital; and share working knowledge and experiences in their own native land. The expatriates could bring a wealth of tacit and implicit knowledge such as best communities of practices; working business models and framework; innovative and entrepreneurial ideas; years worth of experiences because of their understanding of the global cultural differences to do business in a borderless business economy.

In addition, affordable distance learning that focus on developing vocational and entrepreneurial skills will accelerate narrowing the divide that exists in developing countries. Developing countries should expand access to education and knowledge at the national and international level. The expansions in IT include distance learning, online training, virtual

learning, and e-learning. There are several distance-learning models but all of them may not be applicable in the context of developing countries. Ruth and Giri have proposed a model that provides several examples of distance learning in developing countries (Ruth and Giri, 2001). Ruth and Min have analyzed the cost and benefits of distance learning in the context of developing countries. They have included correspondence courses, CD –ROM, VCR, Radio, and Internet based courses as examples of distance learning approaches that are relatively high in yield and low in cost. (Ruth and Shi, 2001) China, South Africa, and many countries in South America have been greatly benefited from distance learning. Other countries could also adopt and customize some of existing affordable models according to their need, capacity of their telecommunication infrastructure, and political context.

Further, liberalization of state-owned telecommunication industries is seen as a positive factor to attract foreign investment, market competition, and private industry involvement. This is critical for ICT infrastructure improvement. This liberalization in ICT will create job opportunities, push countries into a new digital economy, and allow fair market competition by reducing Internet cost for consumers. Nepal is one of the positive example of a country that benefited several other industries from this process after Nepal Communication Authority (NCA) deregulated its telecom market in 1997 (Ghahremani, 2001). The number of telephone lines in the country increased significantly when NCA took a liberal approach by establishing the licensing provision. Nepal has the lowest IP access prices in South Asia. The following figure displays growth in telephone lines and comparative growth rate in the region,

1993-1998.



Finally, setting up community based Internet training centers, such as online libraries, Internet cafes, and government training centers that allow free public Internet use will help to bridge digital divide internally and externally in developing countries. The ultimate result from knowledge sharing, collaboration, and partnership within GUIN will assist in bridging these widening gaps in the areas technology, knowledge, politics, and the economy. Their synergistic approach aiming to bridge digital divide will enhance and improve their relationship within the countries and among the developing countries. The common efforts within the players eventually unite them together to reform the education systems; lead for sustainable development, productivity, competition; strengthen the process in technology innovation; enhance the country's healthcare systems; attempt towards poverty alleviation; and renovate the democracy and e-leadership in the developing countries.

VI. Conclusion

While it is apparent the digital divide is growing and many developing countries at the national and international levels are beginning to address emerging issues of the digital

divide, political and business leaders are still unclear how the revolution of information technology will help to narrow the gap between the haves and have-nots. One thing we all can learn from an technological perspective is that the Internet, online information, and telecommunication certainly have the potential to soothe the increasing gaps and to provide some solutions for the major challenges for those who are facing the digital divide around the world. Whether or not information and telecommunication technology will drive these changes is not the question. What is important is how technology can be used to leverage changes and how the widening gap of the digital divide can be narrowed by rigorous actions to implement proper policies and deploying proper technologies in the right context at the right place in developing countries.

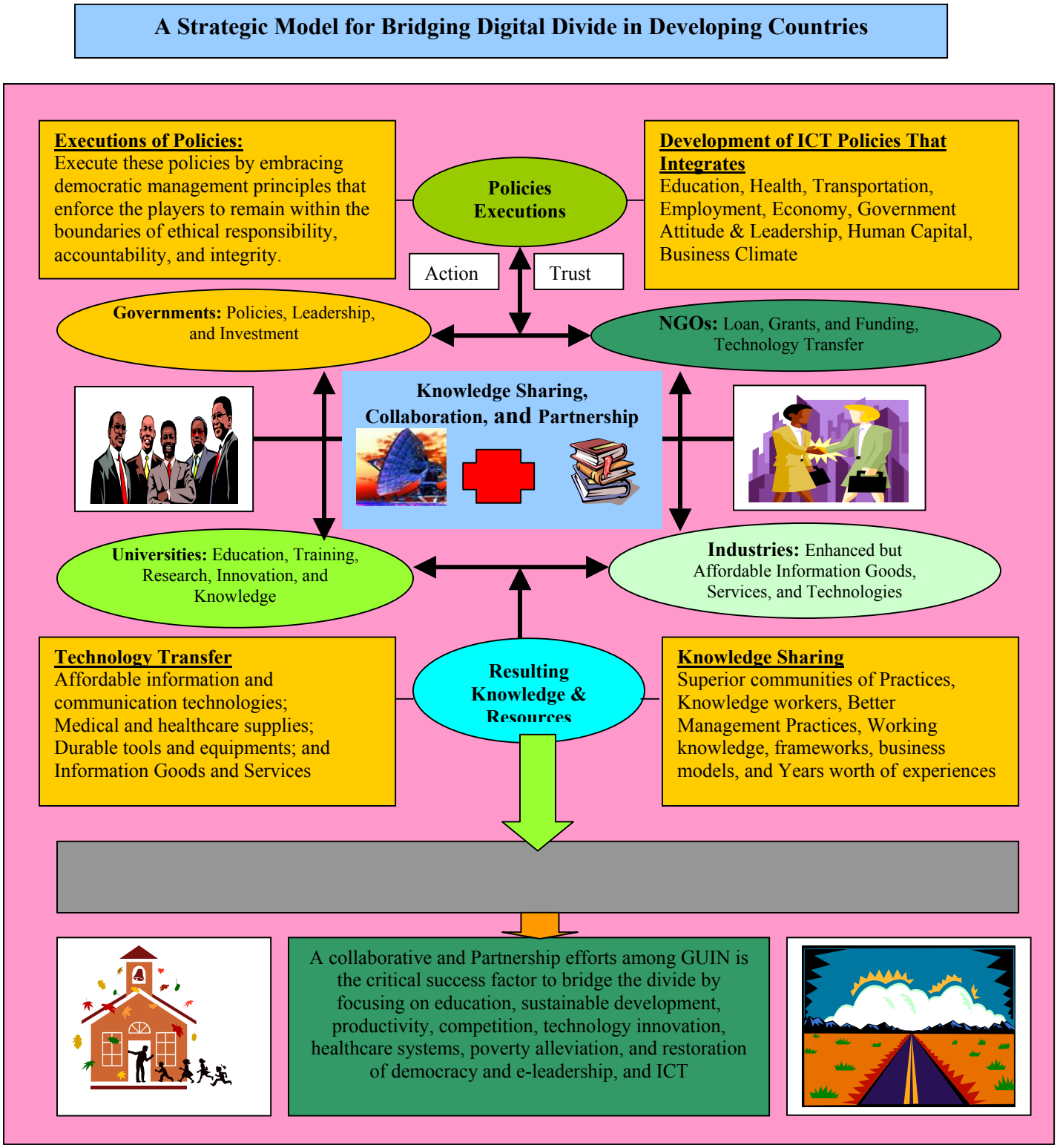


Figure 1.1: Jiwan Giri, International Center for Applied Science in Information Technology, George Mason University

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