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**ICTs AND WOMEN'S LIVELIHOODS - HOW REAL OR TENUOUS IS THE
CONNECTION?**

Revathi Balakrishnan

**Food and Agricultural Organisation, Regional Office for Asia
and the Pacific, Bangkok, Thailand**

IT for Change

**with Development Alternatives with Women for a New Era
and Centre for Public Policy, Indian Institute of Management -
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ABSTRACT

Global economic integration, social transformation and cultural contradictions are in part associated with accelerated applications in Information and Communication Technologies (ICTs). “Information and Communication Technologies (ICTs) are rapidly consolidating global communication networks and international trade with implications for people in developing countries” (O’Farrell and Patricia Norrish and Scott). Hence the intensive interest over the economic opportunities these technologies could bring to the people in developing countries. Yet, people in the developing countries are all not equal but stratified by urban-rural locale, experiences of poverty, social marginalization, educational paucity, gender and age. As in the past, these persisting social differences continue to influence the access to ICTs as it was with agriculture technologies and technologies to fulfill basic needs. Any analysis to delineate the connection between ICTs and women’s livelihoods should be related to these social indicators that determine the situation of women and thus their access to technology in general and ICTs in particular. Furthermore, the analysis should be focused on select groups of women – such as women in rural production and informal sector. Since the opportunities of livelihood choices and livelihood sustainability should be viewed differently professional career opportunities- a ICTs and class issue. In the broader national context there are factors that influence the diffusion and affordability that stipulates populations’ access to ICTs. The national ICT resource and status of women both have to be considered together in assessing the potential of these technologies to improve women’s livelihood. There are macro-factors that influence the constraints and opportunities for women’s participation in information economy and knowledge society including ICT policies and investment in infrastructure (Balakrishnan). It is acknowledged that, “As ICTs increasingly become part of day-to-day development activities, and particularly where there are tangible benefits to be derived such as skills development, increased employment opportunities and more control over remittances, ICTs will become a part of the community’s livelihood system” (Bachelor and O’Farrell). To sum up, though ICTs hold the potential to improve livelihoods of women, it is important to address the current barriers dividing the potential and possibilities, emanating from national and individual constraints. Yet all opportunities do not link women and livelihood directly, but may create the economic, social and legal environment for their effective participation in the knowledge driven social and economic environment. For example “In rural context, the ICTs usually provide very little employment or direct income unlike labor-intensive manufacturing and the Green Revolution, both of which created

substantial employment. ICTs then need to be evaluated mainly in terms of their effect on other sectors and especially on agency development, including that result from sharing experiences of mobilization and innovations” (IFAD). Linkages between ICTs and livelihood of women in rural areas and urban periphery should be examined as relevant to poverty alleviation strategies aimed to improve economic assets, social capital, social integration and political participation. Conventional communication technologies and advanced information technologies as well as needs of the women should be given weight in the decision rules on ICTs interventions. It would be imperative to recognize that ICTs technologies are only “tools” linking electronic service to people in the communities. It would be important to identify good fit between the women as clients and ICTs based interventions for improving livelihood. A few of these factors that could guide the good fit formula are local appropriation, relevant content, mediating structures, leadership, technology decision skills, technology support systems, community resource endowment and social attitudes.

ICTS AND WOMEN’S LIVELIHOODS – HOW REAL OR TENUOUS IS THE CONNECTION?

Introduction

Information is a key resource and communication an integral human process in every society. In recent times innovations, associated with information and communication technologies have created unprecedented opportunities to expand the access to information resource and ability to communicate in a global scale. “Information and Communication Technologies (ICTs) are rapidly consolidating global communication networks and international trade with implications for people in developing countries. Despite this there is a worrying lack of empirical evidence or analysis of actual experiences and effects of ICTs upon poor people’s economic and social livelihoods” (O’ Farrell, Norrish and Scott, 2000)ⁱ. Yet an emerging global consensus is that ICTs driven opportunities are not equally shared among the various societies and social groups across the world. While some countries prosper and benefit from ICTs as engines of growth and their people communicate more effectively applying advances in information and communication technologies, among those promoting equality there is a growing weariness that these technologies also present an inevitable threat of marginalization. The technology divide created imbalances in opportunity between countries and social groups should be reviewed against the backdrop of existing contrasts evident in global community. Most notable contrasts are prosperity against poverty, knowledge against ignorance and globalization against marginalization. The two reinforcing clusters of factors that divide people are evident. The first is marked by globalization, knowledge and prosperity and the second one marginalization, ignorance and poverty.

In the context of globalization, information and communication technologies constitute an important interface in transfer of knowledge and technical expertise and living skills. It should be emphasized that information and communication technologies are tools, thus relatively easier to develop and produce, but the human and social dimensions associated with applying these technologies for improving the living conditions of South Asian women present a complex process. The interface potential of information and communication technologies for improving livelihoods should be assessed, applied and monitored within the current context of development achievements and failures. Against such development performance milieu, it is crucial to hold a pragmatic view in exploring the association between ICTs and women’s livelihood and take on a forward looking stance to identify

options for expanding the choices for women to be effective economic and social actors.

Persisting Divides and Gender Asymmetry

As the development community enters the new frontier of cyber space it is confronted by a heightened sense of new divides that could add to the existing development gaps. Hence, it is imperative to review these divides in their relevance to gender asymmetry in livelihood choices. Here the divides reviewed are “Digital Divide”; “Knowledge Divide”; “Development Divide” and “Social Divide”.

“Digital Divide” is a term used to describe the inequality in access to ICTs among various countries, social groups as well as men and women. The scope of digital divide could be broad, as straight forward as poor access to technology or could deal with complicated issues of local language content and policy constraints. “Access to ICTs is still a distant reality for vast majority of people. The countries in the south particularly rural populations have been left out of information revolution. In many of these countries there is a lack of basic infrastructure, resulting in high costs for installing and running ICTs” (Gurumoorthy, 2004).ⁱⁱ In the digital front, one could adopt a minimalist technology provisioning approach with focus on technology hardware and infrastructure inadequacy to close the divide- cheaper computers, increasing telephone lines, and affordable cell phones and services to improve access. But as observed, “In the face of all current hype about ICTs, it is essential to remember that social structures influence both access and impacts” (IFAD, 2002)ⁱⁱⁱ.

“Knowledge Divide” in part attributable to digital technology divide presents a more complex configuration of issues. Access to information through ICTs, which we could assume, has the potential to improve knowledge among diverse social groups differentiated as rural and urban, privileged and disadvantaged in circumstances of education, economic assets, and wealth as well as men and women. Hence minimal and absence of access to information and communication technologies could create knowledge divide among different social groups- increasing human capital endowment among some groups and further dispossession among others. More importantly the content relevancy presents the greatest challenge of knowledge divide among the rural population, illiterate, and women. “The major barrier to the use of ICTs for women is its lack of relevancy to their lives. Women encounter barriers to the use of ICTs when the learning content is not directly relevant to their livelihood, and when it does not value their knowledge, wisdom and

experience” (Green and Trevor-Deutsch, 2002)^{iv}. A damaging social inequity with implications for human capital endowment that would stem from digital divide would be widening knowledge gap between the endowed social groups powered by current information and knowledge to work effectively and the information and knowledge deprived social groups that lack the capability to operate in an increasingly complex environment. There is the threat of social polarization on the basis of human capital – knowledge haves and knowledge have-nots. Hence, women from such social groups who are already educationally disadvantaged and information poor could be further marginalized in a changing environment that is touted as knowledge society and information economy where citizens prosper by using information resource effectively. ICTs hold the potential to build knowledge bridges if the content and language barriers are systematically addressed and digital divide is decreased.

These divides – digital and knowledge – should be viewed against the fundamental disparity, namely “Development Divide”. The three dimensions of development divide highlighted here are the urban-rural divide, poverty, especially poverty among women and gender inequality in educational achievement. Development divide has an aspect of urban-rural disparity in development gain. Poverty in simple terms may be defined on the basis of resource inequalities-measured in economic terms as income poverty- but it is a multifaceted phenomenon when viewed from the eyes of those living in poverty. The percentage of the population below the poverty line declined in the region from 32% in 1990 to 22% in 2000. Yet, the region is still home to 720 million people or two thirds of the world's poor (ADB, 2005)^v. In Asia and Pacific region poverty is basically a rural problem, and the gap between rural and urban poverty is widening overtime in spite of impressive progress in last three decades in economic growth and poverty reduction. Two thirds of the world's poor live in this region and the majority of poor are women. Most of the poor in the region live in rural areas. Thus the sequential inference is that rural women are poorest among the poor. The concept of increasing representation of women among the poor is referred as “feminization of poverty” (IFAD, 2000)^{vi}.

Information poverty is another aspect. According to UNIFEM “Disadvantaged groups are often prevented from having access to resources, information and policy development...The representation of the affected stakeholders including consumers and women, and the extent to which they have access to information to make knowledgeable and informed decisions, will determine how trade policies and other resultant policies are shaped” (UNIFEM, 1999)^{vii}.

Dispossession of information is a barrier to access knowledge – an important ingredient of human capital – an asset both for household and national economies. FAO reviewed issues of rural women and information as related to achieve food security and proposing a strategy for action. FAO recognizes that among important factors that contribute to increased poverty and exclusion, one of them relates to the “exclusion of large part of the population including rural women, from information flows, communication processes and thus decision making” (FAO 2000)^{viii}.

In a review of “A framework for poverty alleviation with ICTs”, Harris (2002)^{ix} among others makes the following observations; a) Alone, ICTs are insufficient for significant benefits to emerge; directly addressing the needs of the poor and most marginalized, particularly women and girls, is vital and b) While ICTs provide opportunities for development, desirable outcomes always arise from actions of people. Education and skills are key enablers of effective use of ICTs. Hence ICTs’ role in poverty reduction, specifically rural women’s poverty reduction should be evaluated objectively for its potential and limitations. In the short run ICTs hold promise to decrease information poverty, but discerning a direct and immediate link between ICTs impact on reducing rural women’s income poverty would be difficult, particularly in short term.

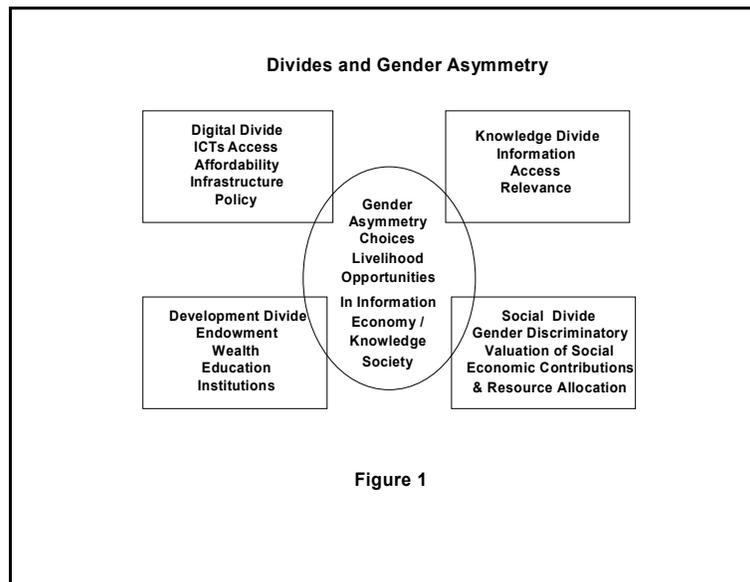
Development divide also has a spatial dimension. The development of infrastructure and service support and market access varies in three distinct locations, namely urban, urban periphery and rural. The further one moves away from bustling urban centers less pronounced are the development gains in education, employment, health care, information and communication services. Hence, the urban sisters have greater access to ICTs and information in contrast to women living in urban periphery and rural and remote areas. In general South Asian urban women have greater access to learning, productive assets and information compared to women in urban peripheries, rural and remote areas. ICTs hold the potential to improve the urban-rural information links as demonstrated in ICTs value in exchanging market information and price trends.

South Asian women register lesser gains in formal education particularly rural women tend to be less educated and lack access to technical information. In the region female adult literacy rate a percentage of male literacy achievement is lower and a reality that highlights gender differences in educational achievement (UNDP, 2001)^x. In South Asia women have only about half as many years of schooling as men, on average, and girls’

enrollment rates at the secondary level are still only two-thirds of boys' (World Bank, 2001)^{xi}. Though literacy data presented by UNDP are not disaggregated by place of residency (urban versus rural), from other sources of information it is reasonable to conclude that adult literacy gains among rural women is even lower. There is also evidence of higher rate of school dropouts among girls relative to boys and more rural girls leave schools compared to rural boys. ICTs can become effective tools in improving the learning of disadvantaged groups if cost effective and creative applications are attempted.

It is acknowledged that "Social Divide" can manifest as class, ethnicity, caste and gender differences and disparities. The current focus is on gender divide. Here "Social divide"- is defined as "social attitude gap" to gender equality both within households and community that influence national policy for development and macro resource allocation decisions as well as intra-household allocation of resources. The social divide-gender discriminatory perceptions and attitudes can be both cause and effect of development divide. "Gender inequalities are deeply entrenched in all societies and are perpetuated through a variety of practices and institutions including policy interventions" (UNRISD, 2005)^{xii}. The "social divide" is most often displayed as gender discriminatory practices and undervaluation of women's economic and social contributions to the household and community. The social valuation could also impact women's use of technologies—since women may be viewed as less skilled with technology or lack the superior human capital to master new technologies. It is suggested that "techno-phobia" is evident among women that can be attributed to the fact that in most developing countries there is a strong cultural bias against the involvement of women with science and technology (Rathgerber, 2002)^{xiii}. Most importantly the persisting social bias that undervalues women's capabilities could undermine the confidence and self-esteem to master the use of emerging technologies as competent individuals. Yet, ICTs could be used as a productive tool for information dissemination, for mobilization of views and to foster discussions to counter the social impediments to women's advancement.

Collectively these divides contribute to gender asymmetry in choices that could lead to differential access to ICTs per se, ICTs based information and knowledge systems and ICTs driven opportunities for livelihood in information economy and participation in knowledge society (Figure 1).



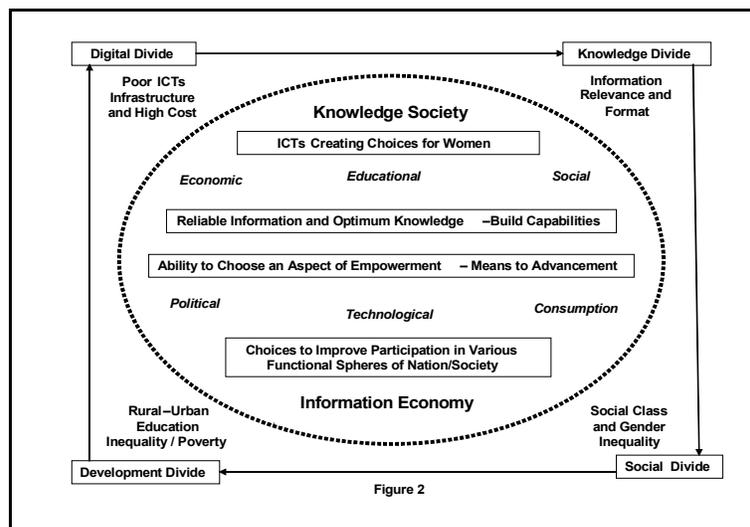
Many interesting questions could be raised as relevant to policy and processes to address the inequities perpetuated by these divides with implications for ICTs and women’s livelihood. These are a) Would closing the digital divide alone facilitate reducing knowledge, development and social divides?; b) Should focus be on closing the social and development divides confronting women to improve their opportunities for livelihood in information economy?; c) What would be the positive outcomes of improving ICTs based opportunities to close the information-knowledge divide among various social groups and thus expanding livelihood options for women?; d) Given the present situation of rural disparity in all the divides presented , should the ICTs for women’s livelihood agenda single out a special focus on rural women as most deprived social group in the knowledge society?

Depending on the professional alliances and disciplinary expertise affiliations, assorted expert groups addressing ICTs for Development will differ on their specific strategies to assist women to improve their livelihoods. As five blind persons gazing at an elephant each specialized group can offer a discrete approach to the agenda for action on ICTs for Development and women’s livelihood. Yet for those providing policy advice and program support to improve women’s access to ICTs as well as their livelihood, it would be important to address the inter-connectivity among these clusters of issues represented in the four major divides. In summation, it would be crucial to recognize the complex interactions among the prevailing divides identified above that would shape the ICTs’ effectiveness to create livelihood opportunities for women.

Livelihood, Capabilities and Women

At the outset, it would be important to adopt a working definition for the term “livelihood”. As stated in most often used definition “Livelihood comprises people, their capabilities and their means of living, including food, income and assets. Tangible assets are resources and stores, and intangible assets are claims and access” (Chambers and Conway, 1992)^{xiv}. Hence women’s capabilities and their means of living constitute livelihood and their assets including claims and access should be increased. In the context of discussions related to ICTs’ relevance and impact on women’s livelihood, it would be important to explore the realities of both promising prospects and current limitations associated with these innovations to improve women’s capabilities in their means of living, their assets as well as their claims and access. It is also important to examine the realities of expanded choices through ICT innovations within the milieu of persisting divides leading to gender asymmetry presented in the earlier section.

Sen (1999)^{xv} offers a “capability and freedom approach”, that conceives “development as a process of expanding real freedom and argues for expansion of capabilities of persons to lead the kinds of lives they value.” Development objective is to improve choices for people in the economic and social spheres of life- it may mean expanding economic options from livelihood or social alternatives to decide about one’s life. Kabeer’s (1999)^{xvi} concept of women’s empowerment is choice and control. Hence the freedom for choices could be crucial component of empowerment process- the women’s rights approach to development promotes women’s right to choose. The choices should be guided by factual information and optimum knowledge. Logically knowledge is critical ingredient to empowerment process. Therefore, we assume that optimum knowledge based on reliable information would improve the odds of making most advantageous choice and thus could lead to improving women’s capabilities and empowerment. In the information economy and knowledge society, the rapid expansion in information and communication technologies offers multiple sources of information and such information used through critical analyses and appropriate application can improve the empowerment process. An overview on advancement for women can be conceptualized as creating choices to improve women’s capabilities for effective participation in multiple spheres of nation-society-economy, education; social, political and technological (Figure .2).



These choices to improve capabilities and means of living or lack of choices should be examined within the context of reinforcing forces shaping gender asymmetry in livelihood options including digital divide. ICTs operate in social and economic milieu but not in isolation and thus the contextual factors influence the prospects of the tools to improve women’s livelihood. Can ICTs be tools of economic and social transformation to ensure empowerment for all women in South Asia? ICTs could be effective instruments of information management and information dissemination to close the gender gaps in access to information, knowledge and skill development. However, it should be emphasized that any new architecture for ICTs for development with gender equality in participation in various spheres of life would demand a change in the traditional perspective that technology is gender and class neutral. In this context, all solutions need to be contextually situated – what works in one country may not work in another. Within the South Asian region there are documented cases of promising possibilities and frustrating setbacks in the application of ICTs to expand social and economic opportunities for women.

ICTs and Women’s Livelihood Opportunities- High End to Low End

There are wide differences among women in South Asia and divergence among South Asian countries in the ICT capacities that shape ICTs driven opportunities for women’s livelihood. The differences among women are based on economic class, age, urban or rural residence, family structure and support, educational attainment-general as well as technical expertise, and technology confidence. The opportunities can be diverse. At the high end these are in high tech industries creating well-paid jobs and global

entrepreneurship opportunities for women professionals and provision of market and craft production information on radio to rural women at the low end. There are mid level IT based employment options for working in call centers, electronic assembly lines and small enterprises. In all these levels, ICTs create jobs or employment opportunities, most of them in urban centers. Additionally we should not overlook the impact of ICTs driven economic expansion and impact of increased purchasing power to create work and employment opportunities in sectors not directly related to ICTs.

So it is necessary to distinguish the direct and indirect impacts of livelihood creation by ICT sector. The focus here is only on the ICT sector dependent livelihood opportunities for women. Very roughly these economic opportunities for women could be grouped under a few categories: ICT-hardware and software designing and development; ICT- equipment production; ICT-equipment retailing and service; ICT- in information management; ICT- in entertainment and recreation; ICT- in user centered employment and consumer /health industries; ICTs for communication for development and ICTs for improving livelihood skills and knowledge. Systematic and planned assessments of these linkages in employment and livelihood for women are still a rarity. The following discussion will present a few examples of such livelihood opportunities, as a walk through the scenarios.

Scenario 1

In the information economy in many instances the work orders come from overseas corporations and managed by national corporations and subcontracting becomes the mode of business operations. A list of remote processing work includes call centers, data conversion, medical transcription, back office operations, content development, deposition summary, insurance claims processing and geographical information systems. But as technological advances progress some of these jobs are under threat. Women in Asia can retain their foothold in IT-related jobs only if they receive generic transferable skills; in addition to skills that are vocation-specific and that have short-term relevance (Mitter, 2001)^{xvii}. This illustrates an imbedded vulnerability within ICT sector opportunity for South Asian women, while highlighting the significance of continuous investment in building capabilities to achieve sustainable economic empowerment in a knowledge society. It would also be important to review the opportunities in information economy for IT driven remote work within the boundaries of countries. An example would be information management to replace outdated modes of managing government information and records. It is replacing paper chase with cyber chase. But there is a covert resistance to move in this direction explained partially by justification for labor intensive employment in highly populated countries and left unexplained is the reluctance to adopt transparency in information management.

Scenario 2

One might find women represented largely in electronic and communication equipment retailing sector as sales persons, demonstrating women's visibility information economy, yet their ability to support service side is rather limited. Most often the service sector responsibilities are with men with due recognition to technical capabilities and advanced training in new technologies. This phenomenon in part is associated with the employable skills of women with some education who become sales personnel and in part the low valuation we profess in our confidence in female technicians' ability to assist in technical services sector. It demonstrates a reinforcing cycle of poor confidence in women's technical ability and thus poor self-esteem among women and limited opportunities. Such a crisis of confidence can be an impediment to attract rural women and women with limited education to employment opportunities that requires technical skills to operate and maintain ICTs independently in rural and remote locations. The current situation calls for building capabilities to remove women's technophobia and

changing social attitudes to improve women's livelihood in the knowledge society.

Scenario 3

ICTs driven livelihood options in user service and consumer industries can be those as managing the cyber cafe, word processing work, digital photo processing, running copying and digital printing shops. Women have found an employment niche in this sector but mostly in a supporting role. A stumbling block for women could be the access to investment capital for building independent commercial ventures. The IT sector high-end venture capitalist model is not a reality for women of disadvantaged economic and social rank. The current model of micro-finance for enterprise development does not provide adequate funds at the levels required for such ventures. In South Asia to achieve women's entry and viability in the ICT sector user and consumer service enterprises that are highly competitive, it would be important to explore innovative approaches in government and private sector guaranteed support system to assist women. Such up scaling of women's enterprises to enter information economy would require skills development; in combination with capital support and most importantly women would need legal knowledge to operate these enterprises. Women would need knowledge to survive in the complex knowledge society and economic support would be crucial to succeed in highly competitive information economy. A promising approach could be found in the enterprise incubation model. In such a model women could be provided capital, and physical facilities supported as loan by the government and the private sector provides business advice and technical training. Public – Private sector partnership is a possibility to support women to expand their livelihood alternatives.

Scenario 4

ICTs application for communication in development is an emerging field of interest in South Asian countries. But no clear verdict is possible at this time on the impact of ICTs on livelihood of ordinary persons who are poor and women; either living in rural and agricultural communities and remote locations. Among others a reason for such ambiguity is attributable to the fact that in many South Asian countries most of the ICT based ventures had been pilot interventions and supported by donors as development experiments. The most often quoted cases found in websites on ICTs potential benefits for women in rural and informal sector livelihoods are: Bangladesh Grameen Communications' venture of rural women's cell phone enterprises; M.S. Swaminathan's Research Foundation supported Pondicherry Village Information Shops; e-Chaupal for market information; Sewa's program on skills development to support women women's work in informal sector; Sri

Lankan Kotmale project; and information-kiosks and tele-centres in the region.

But most of these pilot interventions serve the social development ends rather than livelihood goals. These are valuable and creative social innovations to close the digital divide in rural communities and there had been efforts to be inclusive of women and address their information and skill needs. Yet it is difficult to document demonstrable evidence of direct relational impacts between ICTs based opportunities for rural women and improvement in their livelihood, particularly the sustainability of their livelihood. Current paucity of information could be due to the reason that there had been limited number of ICTs for livelihood activities and these have not been functional for an adequate length of time to make reasonable assessment of sustainability, economic viability and gender specific long-term livelihood impacts.

Another perspective on the pilot efforts is, most of these are driven by NGOs with donor funds or private foundation support, thus government development strategies for women's livelihood improvement may not have adopted the successful lessons from these ICTs and women's livelihood experiments to expand the scale of operations. Moreover, historically in many South Asian countries the private sector involvement in development is not a common experience. Most often the role of private sector in development is not acceptable to those advocates of welfare approach and strong role for government in welfare state. Generally such "traders in development aid paradigm" is viewed with suspicion and disdain. In South Asia such confrontation may not be productive since in Asia private sector took the lead in developing ICT sector and government followed the lead. Hence communication for development strategies to generate viable livelihood opportunities for women would demand a balanced tripartite collaboration of government, NGOs and commercial sector.

Harnessing ICTs to bridge the divides

ICTs as tools for information management and communication can be effective instruments to build capabilities for expanded participation in functional spheres in nation state and society. Innovative and context specific ICT applications can contribute to closing information and knowledge divide among women, expand access to learning and training for skill building, inform social attitudes to promote gender equality and as advanced application becomes common place to serve their health needs. All these applications can be either directed to women as primary users of ICTs and /or

capacity building among service providers and social agents who serve the women's programs. In urban settings women as primary users can take advantage of ICT applications to improve their livelihoods. But in the rural context women as primary users of ICTs is still a social curiosity rather than a common occurrence. The opportunities for using ICT applications for improving livelihood skills are currently mediated through development service providers and they had to be trained in ICT applications to improve women's livelihood. Either directly or indirectly, creative applications of ICTs can improve women's options to be effective economic and social actors. Herein a few such illustrations are briefly reviewed.

ICTs application in information management including sophisticated data analysis can improve the quality, rapid access and effective presentation of information on women to support fact based advocacy, policy formulation and program planning. Another example would be improving the land record information to assess access to land among women and ensure transparency in land deeds to safeguard women's interests.

Electronic voting system improves transparency and simplifies the democratic process. Both educated women and illiterate women can use the system with ease and confidence for political participation. The communication technologies such as radio and television offer multiple sources of information and political analysis and used critically forms the basis for informed citizenship. Now women can know about the political realities beyond that presented by male members of the household.

In the education front with appropriate and adequate investment in content and learning resources, distance education modality can reach the women in the rural areas. Distance learning content could be developed to train the development professionals who mobilize and train women with current technology and social innovations. But only well designed model of "Technology-Human System" will work in the rural areas due to women's high illiteracy, time constraint, and the imposed social restrictions in mobility and interpersonal interactions. The advantage would be standardized and current information could be delivered using ICTs into various distance learning centers and the local organizations including self- help groups and Community Based Organizations can be the mediating organizations to facilitate training /learning with human interface.

With the access to information technology, and with programs in local languages women can be trained to undertake economic feasibility and cost

benefit analysis of micro finance capital use and returns. The records of micro-finance operations maintained in electronic format can provide accuracy and transparency. Such use of IT can lead to informed leadership of these programs among women instead of various mid level agencies offering women shadow leadership by taking advantage of their lack of access to information on the financial matters.

Communication technologies such as radio and television become powerful media to inform and educate women of their rights as well as popular sources to obtain technical and health information. The content for the interactive learning relevant to livelihood are few. Specifically it would be important to expand the investment of resources both human and financial inputs to develop and collect the available relevant information products that deal with the livelihood concerns of women.

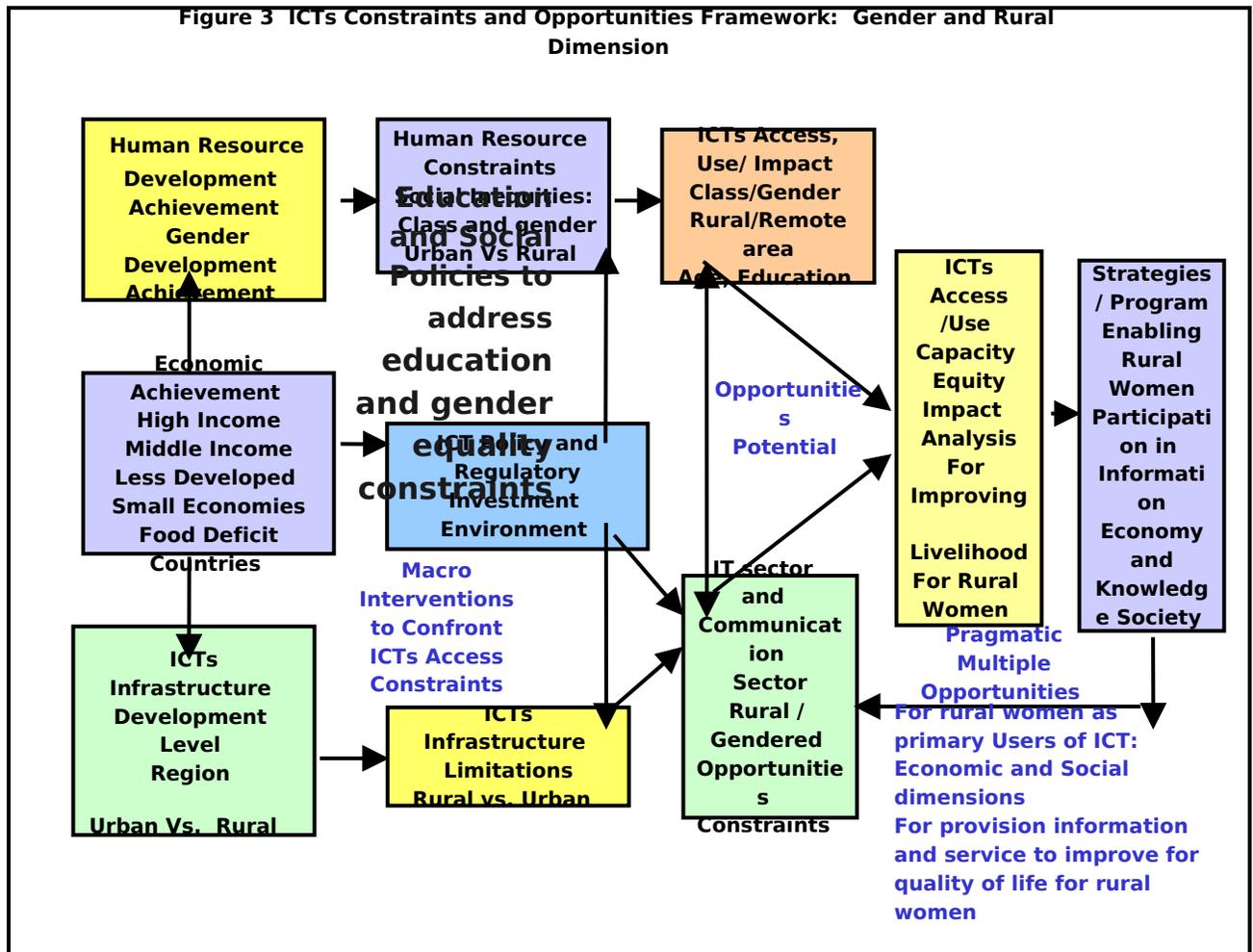
ICTs based information discussion groups and learning resources could be effective in educating specialists and common public on issues of gender equality and women's concerns. ICTs can be an effective communication tool to assist women as well as men to learn about the gender issues through self-learning and interactive information products.

ICTs Constraints and Opportunities Framework Gender and Rural Dimension

The policy and program interventions to improve the ICTs based opportunities for women should be reviewed in the national and community milieu. The most disadvantaged in the new technology regime, could be the rural women. A comprehensive view of the various macro and micro variables that influence the rural women's constraints and opportunities in ICTs driven information economy and knowledge society is presented in Figure.3. (Balakrishnan and Balaji, 2002)^{xviii}. The situation of the rural women presented in the frame work substantiates the central proposition that "it would be imperative to anchor rural women and ICTD to three aspects namely the persisting gender asymmetry in access to assets and productive resources, continued technology gap in rural areas and gender differentiated investment in rural human capital-both public and private investments". The framework links FAO approach to harnessing the potential of ICTs for the advancement of rural women, identifying them as primary users of these technologies as well as to improve their quality of life in rural communities that would favor the improvement in their lives and ICTs for capacity building for rural women and capacity building for development service providers. The

assumption is that livelihood from economic perspective presents only one facet of the realities of rural women's lives in information economy, but the quality of life thinking offers comprehensive picture of their needs and participation in knowledge society.

In South Asian region there are differences among countries in economic achievement that influence the human resource development and gender and development realities. On the other end the ICT sector development also varies widely among the countries and within the countries disparities exist between urban and rural centers. These interacting variables determine the inequities in social and economic situation and human capital endowment as well as policy environment and ICTs infrastructure limitations. Collectively these forces impact on ICTs access and gender and rural-urban differentiated opportunities for livelihood. Strategies and programs for ICTs' applications to improve rural women's livelihood opportunities as well as their quality of life should be pragmatic and boldly innovative recognizing the realities of social and economic divides in the broader context.



Source: Balakrishnan and Balaji, Program Approaches for Asian Rural Women in Knowledge Society, 2002

Conclusion

The persisting divides identified as digital divide, knowledge divide, development divide and social divides affect both gender asymmetry in livelihood choices and access to new technologies. Digital divide as a technology deprivation had to be examined in the current socio-economic milieu of the country. ICTs potential to improve women's livelihood should be analyzed taking into consideration differences among women. These differences among women in human capital endowment determine the economic opportunities in ICTs driven information economy. From the perspective of building women's capabilities to advance women's economic and social empowerment, ICTs as tools of information management and communication has the potential to be effective instruments of changes. But appropriate human interventions and effective social organizations are crucial interface to maximize advantages of ICTs applications to improve women's livelihood. Given the short history of ICTs interventions for development and the pilot nature of these experiments, there are yet no systematic assessments of the long-term sustainable livelihood impacts. It would be important to distinguish the potential of ICTs to improve the livelihood of women through economic returns and their prospects to improve access to information and knowledge to improve their quality of life. Strategies and programs for ICTs applications to improve rural women's livelihood opportunities as well as their quality of life should be bold

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