

THE GLOBAL KNOWLEDGE II WOMEN'S FORUM

ASIAN WOMEN IN THE DIGITAL ECONOMY: POLICIES FOR PARTICIPATION

Drawing on the experiences at grass-roots level and on recent empirical research in this field, this monograph documents the way the emergence of the digital economy is transforming the lives and work of women in Malaysia and some other countries in Asia. The monograph highlights the opportunities and threats that the information and communication technologies (ICT) present to women; at the same time it indicates the way the new technologies themselves could be used to transcend the digital divide around gender. The monograph emphasises the importance of participation of all three stakeholders, the state, the private sector and the NGOs, in a policy framework that explores the use of ICT for women's empowerment and livelihood. The analysis takes note of the vision of the Malaysian Government for creating a gender-sensitive ICT-led caring society. The monograph also makes a case for an exchange of information among the policymakers and NGOs in the region.



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United Nations Development Programme
2001

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Dr. Swasti Mitter



United Nations Development Programme

2001

Published by UNDP

With Contributions From the Government of Malaysia
April 2001

About UNDP and ICT

United Nations Development Programme, with 132 country office worldwide, is the principle development arm of the United Nations, and the lead UN agency in ICT. It is committed to providing strategic policy advice to developing countries and to creating and supporting pioneer initiatives. UNDP also works to galvanize governments, the international community, the private sector, foundations and civil society around more comprehensive ICT strategies that actually start addressing the fundamental problems of limited infrastructure and limited access. The goal is to cut transaction costs for delivering a broad array of public services to the poor, and help the poor and women to become entrepreneurs in their own right.

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The views expressed in this publication are those of the author, and do not necessarily represent the views of UNDP, the United Nations or any of its affiliated organizations, or the Government of Malaysia.

Asian Women in the Digital Economy: Policies for Participation

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Cover Design by Tam Pham and Yong Wai Mun

Printed by:

Percetakan Delima Sdn Bhd
23, Jalan Mawar 3
Taman Mawar, Cheras
56100 Kuala Lumpur
Malaysia

For additional copies, please contact:

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administrations, government and regulatory bodies, intergovernmental organizations and in the private sector;

6. to work together with governments and the private sector to analyse trends in the impact of ICTs on women and incorporate the findings from such analysis into policy dialogue and decision-making, including the establishment and implementation of regulatory mechanisms to reduce negative impacts on women.

Source: Memorandum of Understanding Governing Collaboration between the International Telecommunication Union (ITU), the United Nations Development Programme (UNDP) and the United Nations Development Fund For Women (UNIFEM), 6 July 2000.

The role of inter-agency collaboration will be particularly relevant for monitoring and tracking women's participation in, and access to, telecommunications services and ICT. Finally, NGOs need to play a proactive role in articulating the needs and aspirations of women with respect to the opportunities of the digital economy. For this, it will be important for NGOs to demand and to monitor adequate representation of women in key decision-making bodies.

Box 28: Women need to be Encouraged to Make Use of the New Policies

In budget 2001 the Government of Malaysia provides incentives to boost education in ICT by increasing maximum relief for study fees and by allowing taxpayers to claim for post graduate studies in ICT.

The Government of Taiwan plans free universal Web training: the government of Taiwan has approved a plan for the promotion of a knowledge-based economy which promises free internet training to the general public.

Box 29: Women's NGOs Should be Aware of the Transition to Knowledge-Economy

To promote the k-economy concept, the government of Malaysia has come up with a series of proposals to widen the scope of IT in everyday life. New computers given to employees can be considered for exemption from income tax and for tax deductions.

The Government also introduced steps to broaden the venture capital industry which is essential to develop the new breed of high-tech industries in Malaysia.

Women's increased participation in governance is a precondition for achieving a gender balance in access to, and empowerment with, digital technology. The monograph strongly advocates such increased participation on the grounds both of equity and of efficiency.

For creating a level playing field for women, it is not only the areas but also the modes of policy intervention that become important. In order to make the mandates of policy documents operational, appropriate alliances and collaborations among the state, NGOs and the corporate sectors will be necessary. These collaborations and alliances are described as the 'triple helix'.

For ensuring commitments and participation of the members of the triple helix, it will be important to initiate policy dialogues among them through a series of workshops. These could be organised at national level, sub-regional level, and regional level.

Governments and UNDP Country Offices could play a key role in initiating such workshops. These measures will be much in the spirit of, for instance, the Government of Malaysia's commitment to creating a caring society, and to international co-operation (**Box 27**).

Box 27: The Malaysian Government's Vision For International Co-Operation

International co-operation assumes greater importance as a means of utilizing resources more efficiently ... While co-operation with both developed and developing countries will continue to be strengthened, emphasis will also be placed on drawing upon the economic complementarities of countries of the South and arriving at common policy positions on regional and global issues for mutual benefit.

Source: Seventh Malaysia Plan, 1996-2000

The policy framework also stands to gain from the contributions of UN agencies. The commitment of ITU, UNDP and UNIFEM to promoting women's opportunities in ICT, through inter-agency collaboration and through the objectives articulated below, illustrates this possibility:

1. to develop the exchange of technical information and the preparation of public information materials between the three agencies;
2. to increase women's access to information and communication technologies (ICTs) by strengthening the capacities of national administrations, United Nations organizations, bilateral agencies and NGOs in the area of gender analysis;
3. to understand and promote ways in which telecommunication services and ICTs can create opportunities for women's empowerment;
4. to encourage governments, intergovernmental organizations and the private sector to review and revise, as appropriate, their respective policies and practices to ensure that the recruitment, employment, training and advancement of women and men alike are undertaken on a fair and equitable basis;
5. to work together with governments and the private sector to facilitate the employment of women and men on an equal footing in the telecommunication field, including at senior levels of responsibility in telecommunication

Abstract

Asian Women in the Digital Economy: Policies for Participation

Drawing on the experiences at grass-roots level and on recent empirical research in this field, this monograph documents the way the emergence of the digital economy is transforming the lives and work of women in Malaysia and some other countries in Asia. The monograph highlights the opportunities and threats that the information and communication technologies (ICT) present to women; at the same time it indicates the way the new technologies themselves could be used to transcend the digital divide around gender. The monograph emphasises the importance of participation of all three stakeholders, the state, the private sector and the NGOs, in a policy framework that explores the use of ICT for women's empowerment and livelihood. The analysis takes note of the vision of the Malaysian Government for creating a gender-sensitive ICT-led caring society. The monograph also makes a case for an exchange of information among the policymakers and NGOs in the region.

“Developments in e-commerce, which is a manifestation of the ‘digital economy’, bring to the surface many related issues which challenge common and established practices, laws, and systems. In this new ‘digital economy’, business activities will be possible with minimal physical movement of people, money and, in many cases, products....Information technology, which is the foundation of this new economy, will continue to develop at a rapid pace and will continue to influence the volume and the direction of economic activities. As such, many of the existing rules which apply in today’s economy can no longer be applied in the ‘digital economy’...We should all prepare ourselves to embrace it, or we will be left behind....”

Dr. Mahathir Mohamad
Honourable Prime Minister of Malaysia

From speech delivered at the “Economists Roundtable in Electronic Communities in Asia”
in Seri Kembangan, Malaysia, on January 13, 1998

“Where women have traditionally come up against all manners of discrimination, glass ceilings and parochial attitudes towards gender equality, developments in ICT promise to be a great leveller between the sexes in times to come... ICT has the potential not only to furnish these women with information but facilitate learning educational and economic opportunities.”

Abdullah Ahmad Badawi
Deputy Prime Minister of Malaysia

From speech delivered at the opening of the forum on “Women in the New ICT Era: Challenges and Opportunities” in
Kuala Lumpur, Malaysia, on October 23, 2000

For education and training the policies should focus on:

- new modes of training such as distance tele-education that allow women with children to receive lifelong education, if necessary at home or at neighbourhood centres; these measures would allow women to sustain if not expand their recently-acquired share of the ‘new economy’ jobs;
- institutions such as telecentres that allow women to gain computer (digital) literacy at a low cost, subsidised by the state or the donor agencies;
- teaching materials that enable women to be knowledgeable in the methods and scope of setting up e-business and e-commerce;
- enrolment of women students in ICT-related courses, in order to equip them with the skills required by the corporate sector.

For addressing the challenge of content the policy framework should initiate:

- training in website design that reflects the professional, vocational and business needs of non-élite women;
- translation of material from the Internet in local languages, for the use of those who are not literate in English; this is particularly important for gaining market information, and for advertising goods and services in the cyber-economy.

Box 26: Portable Technology For Rural Auxiliary Midwives:

The Pervasive Computing Group of CMC R&D at Hyderabad in India has collaborated with Apple Computer’s Advanced technology Group to implement a software application addressing the increasing demand that is being placed on rural midwives to collect accurate data and produce paperwork. The icon driven software runs on a small hand-held portable computer. The application runs in various Indian languages. It is compatible with the existing hierarchical health care setting and reporting structure that is used in the field and with the Mac/Windows based applications that are used in reporting centers.

(Source: Millar and Mansell, SPRU, UK, 1999).

For an enabling regulatory environment the policy framework needs to consider:

- consequences of existing or future legislative measures (for example, relating to working in night shifts) that condition the extent or nature of women’s integration with the digital economy;
- systems of taxes and subsidies that influence the flow of investment in specific sectors such as in ICT-enabled services which are becoming important areas of employment for women in the formal sector in Asia;
- employment and labour laws that will guarantee women dignity and safety at work in novel institutions such as in call centres, in new work practices such as in teleworking, and in emerging occupations such as in data entry work.

a framework will inevitably rely on a policy dialogue between women's NGOs and the policymakers.

In this participative approach, the process of policy formulation becomes just as important as the final policy document.

For empowering women in the digital economy, policies need to be geared towards the following distinct areas:

- **Infrastructure**
- **Work arrangements**
- **Education and training**
- **Challenge of content**
- **Regulatory environment**

For infrastructure it will be important:

- to reject the concept of women as a homogenous group, and to question the traditional approach of 'one size fits all'; to assess specific requirements for different groups of women differentiated by their economic class, ethnicity and locations and nature of work;
- to take into consideration the infrastructural facilities that will expand the scope of the digital economy, including those of e-commerce, in rural areas; a large proportion of women in Asia live in rural areas, and women form the majority of the rural poor; policies for democratising the benefits of ICT will entail measures to close the rural/urban digital divide;
- to evaluate costs and benefits of acquiring software from alternative sources such as through open-source software (such as the Linux operating system), for the low-cost economic empowerment of women;
- to experiment with emerging institutions such as cyberkiosks and telecentres, which potentially allow women to use the relevant infrastructure in a cost-effective way, either on a co-operative or an individual basis.

For women-friendly work arrangements the policymakers need to:

- explore the desirability and effectiveness of new modes of working, such as home-based teleworking or working from neighbourhood centres;
- assess the potential opportunities and hazards related to employment in emerging institutions such as call centres;
- initiate legislative and educational measures to counteract the negative consequences of new types of work arrangements on women's health, career paths and collective bargaining power.

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Part 5

POLICIES FOR PARTICIPATION

The digital economy opens up fresh employment opportunities on an unprecedented scale for women in Asia; yet as the arguments and analysis of the monograph indicate, the potential becomes a reality only through interventions by the national and international policymakers.

The interventions need not 'crowd out' the initiatives of the private sector. Women in Asia have benefited from the dynamism of the 'new economy' that is essentially driven by commercial considerations. The role of the policymakers becomes significant only in relation to concerns that cannot be taken up by the private sector. Such concerns relate primarily to women's unequal access to infrastructure, education and training. Redressing these inequalities requires an enabling environment with appropriate regulatory and legislative measures.

It is in the context of creating such an enabling environment that an agenda for action by policymakers and donor agencies assumes significance. The generic skills such as computer literacy or competence in English (the language of the internet) are unlikely to be provided by the private sector. The focus on training in the private sector will understandably be vocation-specific, geared to a particular industry or occupation. Again the private sector cannot take the responsibility for ensuring an adequate national information infrastructure for the benefit of the poor. It is only the state, with support from UN and donor agencies, that can bear the cost of providing hardware, software, and training centres for the poorest who have so far remained excluded from the market-oriented digital economy.

In Asia, as elsewhere, the policies become implementable only when formulated in response to the express needs of citizens, women and men. This 'demand-driven' approach requires, crucially, the participation of women, along with men, in formulating a framework for actions and change. The policies need to be relevant for the adoption, adaptation and implementation of ICT in the sphere of paid work. Such

The potential winners in the digital economy are young, urban, and from a relatively privileged background. The changing structure of employment in the telecommunications sector, for example, reflect the trend. A new cohort of young women with technical skills and computer literacy find sufficient opportunities of employment; in contrast, the older women, in the absence of suitable training, are made redundant. Thus in a policy framework, attention should be given to different needs of younger and older women in planning to democratise the benefits of an IT society.

In a spirit of euphoria one must not forget the plight of those who are left behind. There should at least be adequate provision of safety nets for them (**Box 25**).

Box 25: Voices Of Women Who Are Left Behind

The hand-loom weavers of Delhi being displaced by CAD/CAM ask, "Is there a future for us and our children in the new economy and new society?"

Source: Gourie Choudhury, Action India, 1996

Finally, the monograph addresses the question of whether exclusion from the digital economy matters. Asia contains the largest number of men and women subsisting below the poverty line; South Asia, along with Sub-Saharan Africa, also has the largest proportion of people living below the line. Women form the majority of the poor. This being the case, one could argue that the policymakers should concentrate more on the basic needs of the community such as clean water, adequate housing and good health before engaging in esoteric areas such as ICT for women's economic empowerment.

The monograph on the case studies, collected from different parts of Asia, attempt to highlight why exclusion really matters. An extension of economic opportunities, as the case studies show, are linked with possibilities of improving the overall quality of life. With well thought-out policies on the use of ICT, it is possible for developing countries, and women therein, to contribute to an emerging new economy geared to a global market, and to revitalise the traditional old economy catering for local needs.

The material in this monograph has however revealed one major gap. The current literature is awash with success stories; the cases of failure and disappointment in narrowing the digital divide does not get much mention. Yet, for the policymakers and NGOs in Malaysia and in the rest of Asia, an analysis of what went wrong will provide valuable insight. The monograph thus emphasises the need for research in this direction, and makes a case for a cautious optimism.

Acknowledgements

To Phillips Young and Joyce Yu of UNDP for their encouragement; and to Tam Pham of UNDP for providing me with important information on national and international ICT policy.

--Swasti Mitter

Box 24: An NGO Takes The Rural Community To The Digital Economy:

One of the biggest challenges that Malaysia and neighbouring countries face as they strive towards industrialised nation status by the year 2020 is to ensure that the rural populace is not left out. With ICT developing at literally breakneck speed (and progress being tracked in "Internet time" rather than real time), there is a very real risk that the divide between what is termed digital "haves" and "have-nots" will widen very quickly.

That aside, perhaps a more compelling reason to bring ICT to the rural areas is the tremendous potential of the Internet as an engine for social and economic re-engineering. With the global reach it provides, the Internet - particularly through the World Wide Web - empowers remote communities to participate on the global stage. It is this spirit that permeates the Smart Masyarakat Project (SMASY) - Smart Community Project developed by Worldview Foundation in the state of Selangor. Because of this, the project is not content to simply provide PCs for people to access the Internet.

The SMASY committee developed four information kiosks and organised weekly training sessions for the villagers. The kiosks are designed for ease-of-use: the villagers access the interactive multimedia content via a simple, intuitive touch screen interface. The lack of removable storage devices was necessary to simplify maintenance, yet the design was made for easy uploads of information while providing a degree of robustness to prolong its working life.

To achieve the goal of creating a self-sufficient community, a group of young people was appointed to maintain the equipment.

The Internet manifests itself in various, often powerful, ways. A housewife with no higher education talks of setting up an online shopfront to market her home-based tailoring business. A university student studying in the city corresponds with her family in the village via e-mail. Demands for home PCs in the largely agrarian community have increased. One of the villagers has even started to clone computers for sale, and some have begun to design their own Websites as well as for local businesses. In many ways, the project is already integrated into everyday life in Kampung Raja Muda Musa.

In this way, SMASY has achieved its goal to leapfrog the agrarian community into the IT age. The project was designed from the outset as a new and genuine application. It combines 3 major elements - technology development, training development and community development - which are geared towards the creation of a civilised society as emphasised in Malaysia's New Philosophy of Rural Development.

(Source: Worldview International Foundation Workshop on "Knowledge on Demand", September 12-14 2000, Dhaka, Bangladesh)

The polarities between men and women, and between groups and communities in the digital economy, reflect the existing inequities in the overall economy. In order to forestall any increasing inequity, and to create a level playing field, it is necessary to opt for a policy of targeted access, rather than universal access, for infrastructure, education and training.

Box 23: NGOs Take ICT to Rural Women

It isn't every day that village women and men sit down to a personal computer, log in, and download data that is useful to them. But in six villages in the Union Territory of Pondicherry in South India, where the income level of villagers is less than Rs 43 per day (about \$US1), this is happening.

In Kizhur village, 21km west of Pondicherry, three women huddle around a computer, inputting data on the self-help group project. The keyboard has English characters, with a template of Tamil (one of the Union Territory's official languages) characters. From the adjoining room comes the sound of children playing, and rice being cleaned in a mambo husker.

The project, initiated by the Chennai-based MS Swaminathan Research Foundation (MSSRF) was started in Kizhur in 1998. Intended as a pilot, its goal was to take computers to villages and use them for generating local knowledge and information needs. Research prior to the start of the pilot showed that villagers wanted information on agriculture and grain prices, general and reproductive health, and government programmes for welfare and services for those living below the poverty line.

Content is created at the village centres. There is detailed documentation on sugarcane cultivation; a guidebook on application of bio-fertilisers in rice cultivation; a how-to document on herbal medicines for minor disorders among children, and on local religious festivals.

Source: Anita Anand, Women's Feature Service

The policies that are needed to empower women in rural areas should thus be qualitatively and quantitatively different from those needed to empower women in urban areas.

Foreword

The convergence of computing and telecommunication technologies, and in particular the Internet, has had a profound and transformative effect on society and the economy; from the way we live, work and interact with each other to the way we conduct business. But while these new information and communication technologies (ICT) offer vast and unparalleled opportunities in terms of business development and job prospects in the emerging and rapidly growing digital economy, they are also one of the contributing factors to disparities among different social and income groups. This disparity, coined as the digital divide, is one of the most critical development issues emerging as a result of the rapid but extremely uneven advancement and diffusion of ICT over a very short span of time. But social and income disparity is only one aspect of the digital divide; there is also the gender-based aspect.

At the Global Knowledge II Conference held in Kuala Lumpur, Malaysia, March 2000, the Women's Forum, sponsored by Malaysia's National Council of Women's Organization and UNDP, brought to the fore the gender dimension of the digital divide. It was argued by some 130 women from around the world that the digital divide is not just the polarization between the "information rich" of developed countries and the "information poor" of developing countries, it is also the disparity in terms of access, usage and benefits of ICT between men and women everywhere. In most developing countries, women represent the majority among those on the margins of society and the mainstream economy. Unless the challenges of poverty, lack of access to resources and opportunities, illiteracy, lack of basic computer skills, or language barriers are addressed, the vast majority of women will continue to be excluded from participation in the digital economy. Rather than reaping the benefits of ICT or opportunities that the new economy brings, they will be further marginalized from the mainstream. These developmental challenges were recognized and stated as obstacles to the full implementation of the Beijing Declaration and the Platform for Action.

This monograph on women in the digital economy is a follow up to the GKII Women's Forum and the ensuing final forum report entitled "Transcending the Gender Digital Divide." By commissioning this work, UNDP wishes to not only highlight the gender challenges of the digital economy, but also to offer viable policy solutions based on experiences from the Asian region. Dr. Swasti Mitter has cogently articulated the need for policies to be geared towards infrastructure, work arrangements, education and training, challenge of content, and regulatory environment if women are to be empowered to participate in the digital economy. Following on the research work we have carried out on Teleworking in Malaysia, this monograph represents UNDP's ongoing commitment to offering innovative policy solutions that not only address the negative impacts of globalization and new technologies, but also the unprecedented opportunities that they bring.

We wish to acknowledge our counterpart, the Economic Planning Unit in the Prime Minister's Department, for the financial contribution towards the production and printing of this monograph.

Phillips Young
UNDP Resident Representative (Malaysia)

Preface

This monograph captures the essence of the discussion of the Global Knowledge II Women's Forum held in Kuala Lumpur in March 2000. The Forum focussed on the existing gender based socio-economic disparities which are being widened by the growing digital divide that will exclude many women, particularly the poor and those in rural communities from the knowledge economy and society. Inclusion in the emerging new economy is vital for extending economic opportunities and improving the quality of life.

In encapsulating the ideas about promoting gender equality in access to and use of ICT, Professor Swasti Mitter has brilliantly recommended several policy options to ensure women's place in the emerging global knowledge society and economy. Whilst ICT has opened up women-friendly opportunities in employment, global work distribution and education in both the formal and informal sectors, Professor Mitter constantly emphasised that domestic sustainability must be built because rapid advances in ICT render uncertainties in ICT related foreign jobs which can easily disappear. Thus Professor Mitter discusses three specific dimensions of ICT-led globalisation that affect women's livelihood in the context of developing a sustainable domestic knowledge economy which addresses gender inequities. The ICT-led globalisation dimensions are the abilities to participate in the global work distribution, to adapt global technology for entrepreneurship and to tap and contribute to global knowledge for a better quality of life.

Professor Mitter suggests collaboration between government, the private sector, NGOs, UN organisations, and donor agencies to create a level playing field for women through policies that address targeted access to affordable simple infrastructure (including communal centers) and culturally relevant as well as IPR protected content; new modes of employment such as telework (both home and centre based) that allow women to effectively combine their traditional roles with the challenge of a professional career in an enabling regulatory environment; training opportunities (including distance education) that incorporate a long term perspective of enabling women to acquire generic transferable skills as well as the short term vocation-specific technical and business skills which empower them to migrate to the knowledge economy both as employees and entrepreneurs; and marketing of the creative wares of women traders in new niche markets in the cyber economy.

Professor Dr Sharifah H Shahabudin
National University of Malaysia
Chairperson of GK II Womens' Forum and
Deputy President of the National Council of Women's Organisations of Malaysia

PART 4

WINNERS AND LOSERS

The cybereconomy is by no means gender-neutral. Women, in all strata of the society, encounter common disadvantages which limit their access to the Internet. Competing demands on their time, both as home-makers and workers, limit their opportunities to acquire the knowledge to use the Internet. The ITU report Internet for Developing (1998) mentions the phenomena of cyber sex discrimination. Women in general also have less access to money, property and education, making it difficult for them to participate on a par with men in the telecommunications revolution. Increasing commercialisation of the internet is attracting more business users but -- as shown by the research on telework and teletrade, funded by UNDP (Malaysia) and the Government of Malaysia -- senior professionals and managers are all men. This is true not only in Malaysia but also in the rest of Asia. In fact, based on existing evidence, organisation such as ITU fear that IT may be widening the gender gap.

However, not all women are equally affected by the digital divide; women in rural areas encounter a far greater degree of exclusion than women in urban centres.

Disparities between urban and rural communities are startling. Even in Malaysia, where the Government has taken a stance of distributing IT opportunities to rural areas, most internet hosts are still in big cities. In other countries in Asia, the disparities are even greater. In Bangladesh, for example, almost all the internet hosts are in the capital city (**Box 23**).

to a felt demand; they are more to introduce new ways of learning, communicating and doing business to poorer communities and groups.

Telecentres have not, as yet, become prevalent in Asia; the institution of cyberkiosks or telekiosks are becoming more common there. In India, a large number (approximately 300,000) of small-scale and minuscule entrepreneurs, many of whom are women, have in the last five years successfully set up businesses by running telephone booths for collective use; these small street shops offer a public facility for long-distance calls. The trend in India is now to upgrade the STD (subscriber trunk dialling) booths to offer email and internet facilities to those who cannot afford to have their own telephone; 'roofless' people, plumbers, street vendors, among others, are regular users of these kiosks.

Cyberkiosks offer opportunities to acquire hands-on skills to both the entrepreneurs and to the users. Unlike telekiosks, however, a degree of computer literacy and familiarity with the hardware is essential for starting and/or using cyberkiosks. Two prestigious academic centres of training in Mumbai - NCST, and SNDT Women's University - have made tentative plans to give the requisite training. The formulation of such training modules will also be useful for other countries in Asia.

Cyberkiosks are market-oriented. Telecentres could be a useful institution for those who work beyond the boundaries of market mechanisms; the rural poor of many Asian countries are examples. Telecentres could be equally useful for those women who, whilst not from the poorest of backgrounds, are underprivileged because of their gender. It was observed in the Indian survey of telework and teletrade that women are often not given rights over the family property, where they might start the cyberkiosk; parents often prefer to give a room in their house to the son, rather than to the daughter.

For these categories of women, telecentres may prove useful for entry into the digital economy. The vision of these centres is different from the telecentres in Africa; they are viewed as an innovative institution through which women can start businesses in information-intensive work.

In Calcutta, women researchers and activists are currently looking into the possibility of setting up telecentres in the form of a co-operative of small women entrepreneurs, in partnership with the private sector firms, so that the co-operatives can have a ready clientele for service work in medical transcription or data entry work. They are hoping that this partnership will also give women knowledge of the market and business skills related to quality control and prompt delivery. It will be useful for Malaysia to evaluate this vision for promoting the business opportunities of women in Malaysia.

PART 1

CONTEXT AND CONTENT

The context and content of this monograph evolved from the Women's Action Forum of the second Global Knowledge conference (GKII) that took place in Kuala Lumpur in March 2000. The Forum called its special session on the eve of the main conference, in preparation for introducing the dimension of gender in the mainstream debate. The digital or knowledge economy, and women's access to it, took a central place in the discussion.

In this pre-conference Forum, as in the main conference, there was a consensus that it is the digital economy (**Box 1**) - the material base of the emerging digital society - that alters and, in turn, structures the relationship of power between countries, as well as between groups within a country, and that degrees of access to opportunities created in the 'new economy' (**Box 2**) define women's place in the global economic community.

It is against this background of the emerging new economy and women's unequal access to its opportunities, that the Forum evaluated the consequences of a growing digital divide (**Box 3**) between social cohesion and sustainability. 130 women, from different parts of the world, articulated in the Forum their thoughts and concerns to promote the relevance of gender in the discussion of the digital economy and ICT policies.

Their arguments were based on grounds both of equity and of efficiency. Without productive efficiency, women agreed it will be difficult to sustain programmes for distributive justice. However it is in the digital economy, more than in the previous economies, that women can offer the skills and expertise needed by companies and their countries in order to:

- Strengthen their domestic base in the ICT sector; and
- Be the recipients of information-intensive jobs relocated from high-wage countries

Box 1: The Nature Of The Digital Economy

The digital economy is essentially the outcome of the digital technology that, based on the 'ones and zeros' of [binary] computing, has given rise to an information age in which geographical location is, in many spheres, no longer a consideration in the production and distribution of goods and services.

Digital technology has made it possible to convert traditional media and multimedia into digital data, which can be stored, manipulated and transmitted quickly and efficiently over wired and wireless networks, in large volumes, without loss of quality and at low cost.

The convergence of three Cs - computing, communications and consumer durables - has opened up seamless access to multimedia ICT, culminating in internet technologies, which have laid the foundation for new ways of organising work (e.g., telework), employment (e.g., call centres), and education (e.g., distance education) - all of which have the potential of being women-friendly.

In the light of changing skills requirements in the digital economy, women's access to infrastructure, education and training becomes important; not only for achieving equitable distribution, but also for enhancing competitiveness and productivity.

In the Forum, discussions of productive efficiency and of equity were extended beyond the boundaries of the formal sector. In Asia, as in most other developing regions, employment opportunities in the formal sector elude the majority of women, who often earn their livelihood in the informal sector as self-employed or as employees of minuscule business units.

There was thus some urgency in the Forum to alert the donor agencies, the corporate sector and the government to the needs of women in small-scale businesses, and to exploring the potential of ICT in empowering women in this sphere. Assisting women's participation in e-commerce could be justified also on the grounds of efficiency, as it gives the countries an important entry point to the global trade in information processing and dissemination.

National governments, donor agencies and UN bodies could assist women to acquire those technical and business skills that the market-oriented private sector looks for in expanding digital commerce and economy.

The arguments in the Forum stressed the case of productive efficiency. At the same time, they urged the participants to take up the explicit question of distributive justice. Productive efficiency is a necessary, but by no means a sufficient, condition for distributive justice. There is thus a call for policy intervention for achieving justice in gender equality.

For the Government of Malaysia, it was important to explore the possible advantages and disadvantages of various forms of telework. It is in this context that the Government, in collaboration with UNDP Malaysia, sponsored research to evaluate the trend and the future potential of telework (**Box 22**).

In Malaysia, which is facing a tight labour market and which is relying on migrant labour, teleworking presents an opportunity to:

- gain and retain women in the labour force, particularly in those sectors and occupations that need IT skills; and
- allow women to stay in information-intensive occupations without lowering their quality of family life.

The concept of teleworking is thus much attuned with the vision of the Government of Malaysia to:

- place Malaysia firmly in the global digital economy by 2020 (Vision 2020); and
- create, with the use of ICT, a women-friendly and caring society.

Of all centre-based telework, call centres and satellite offices performing back office functions are becoming visible in the developing world. They are becoming a common phenomenon in English-speaking Asian countries such as India and the Philippines. Most jobs of this type in these countries come from companies abroad that outsource from low-wage countries in Asia.

Malaysia has not, despite its multilingual and multicultural population, yet succeeded in attracting international telework. This could be for different reasons; first, wages are much lower in the Philippines and India than in Malaysia; it could also be that Malaysia is not as efficient as India in overseas marketing of its quality human resources. It will be rewarding for Malaysia to evaluate strategies to attract this globally-distributed work, by offering skills and expertise that India cannot offer. Countries in the region could follow a principle of co-operative competition, and agree upon the market niche for their respective competitive advantages.

Centre-based teleworking could also be beneficial for extending the benefits of teleworking to the underprivileged and the poor. Two major organisational innovations that have been tested so far are telecentres and cyberkiosks. Telecentres, often called multipurpose community information centres, have been tried out in extending the access and skills to underprivileged groups including women, mostly in Africa. These centres provide facilities for cost-effective collective use of computers, the internet and associated technologies, and are usually set up by international agencies such as IDRC Canada or UNDP; sustainability of the centres, when the financial subsidies and technical assistance are withdrawn, cannot thus be guaranteed. The centres also provide free or heavily-subsidised training for computing and related skills. Centre services are not necessarily provided in response

- in satellite offices such as call centres (where the customer care services of a company get performed);
- at clients' offices (when for example software houses send programmers to the office site of a client); and
- in neighbourhood centres, shared facility centres or telecentres (where space is hired either by companies for their employees, or by the freelancers).

Centre-based teleworking, particularly in neighbourhood centres, presents new possibilities for working mothers by:

- reducing commuting time, being closer to home and the children, and not having to worry about domestic chores while working; and
- allowing women to maintain professional and social interactions with colleagues, and by not becoming invisible to the organisation.

New institutions such as call centres and satellite offices offer fresh employment opportunities to women, but also raise new types of labour concern. Monotonous yet intensive work, in keyboard inputting or answering telephone calls, leads to repetitive strain injuries and burnt-out syndrome. With rapid employee turnover there is limited scope for collective action; hence, despite the employment opportunities, these centres are often described by women as the 'sweatshops' of the digital world.

Box 21: Research Leads To Policies

The collaborative research between UNU/INTECH and MIMOS Berhad on teleworking has encouraged the Government of Malaysia to set up a pilot centre for teleworking for the benefit of women in Subang Jaya.

Box 22: Research On Telework

From 1997 to 1999 the Government of Malaysia and UNDP Malaysia funded a project entitled Teleworking & Development in Malaysia in order to explore the potential of different forms of telework for the career path of women and industrial efficiency of Malaysian companies.

(This project - based at the United Nations University Institute for New Technologies (UNU/INTECH), Maastricht, in partnership with MIMOS Berhad, Malaysia - was directed by Professor Swasti Mitter in co-operation with Dr Cecilia Ng.)

In India a sister project was undertaken more or less at the same time. This project addressed similar questions from the perspective of a country that, unlike Malaysia, encountered a labour surplus. The project, on the basis of the qualitative and quantitative surveys, estimated the extent and trend in telework in key sectors. It also documented the perception and attitude of women teleworkers and male employees and management.

(This project - with founding from IDRC Canada - was also directed by Professor Swasti Mitter in collaboration with Dr. S. Ramani of NCST, Mumbai.)

Box 2: The Blurred Boundary Between The 'New' And The 'Old' Economy

The new economy generally refers to emerging information-intensive industries, (e.g. software and related services) or to new retailing companies (e.g. dot.com companies). The new economy thus covers institutions and activities that relate to the processing and dissemination of digitised information for commercial purposes.

ICT is, however, also transforming production processes and modes of commerce in the old economy (the so-called 'bricks and mortar' industries). Amazon.com is a classic example of the introduction of ICT transforming 'traditional' modes of commerce in a 'traditional' business.

Hence, some researchers feel that it would be more sensible to speak of the 'brick and click' economy - sectors that use and/or produce ICT - to distinguish those sectors from 'bricks and mortar' sectors that use no ICT.

Box 3: The 'Digital Divide' Defined

The digital divide connotes the gap between those people who have access to digital technologies and those who have not. A growing digital divide thus refers to a situation in which an increasing number of people are excluded from the benefits of the digital or information economy and society.

The term received much attention following the publication of a series of reports entitled 'Falling through the Net' from the National Telecommunication and Information Administration of the US Department of Commerce (three since 1995).

According to an ITU report entitled 'Internet for development' (1999) there is also evidence of 'cyber' sex discrimination in access to internet technologies.

In most countries women form the majority of the poor, who get excluded from the information society because of their lack of access to infrastructure, education and training, which are the key instruments of inclusion in the digital economy.

The Forum was thus vocal in urging the state and donor agencies to create an enabling environment that responds to the needs of the poor, who operate beyond the domain of the market economy. The monograph thus is an elucidation of the arguments, and a response to the questions that were raised in the Women's Action Forum in March 2000. It reflects the needs and aspirations of women from all over the world, but from the viewpoint point of Malaysia and its neighbouring countries. There are reasons for narrowing the geographical focus. The scope of exchanging information and experience is relatively greater among countries within, rather than beyond, this region. This is because many of these countries share similar factor endowment, comparable culture values and a common history of colonialism.

The monograph provides an analytical tool for national and international policymaking. Hence, it addresses the advocacy roles of two major stakeholders - government bodies and NGO's - that are active in initiating the issue of gender in national policies.

The monograph, in response to the needs expressed by the participants of the Forum, aims to contribute knowledge input into the activities of NGOs, the government, and UN organisations in other parts of Asia, in promoting gender equality in the access to and use of ICT.

The monograph in addition aims to place the question of gender on the agenda of collaboration between developed and developing countries, in narrowing the international digital divide. It is a legitimate objective as the gender dimension has not yet been mentioned in the G8 discussions relating to international collaboration in the field of ICT (**Box 4**).

Box 4: Commitment From The Governments Of G8 Countries: The Missing Element Of Gender

There is a need for greater international dialogue and collaboration to improve the effectiveness of IT-related programmes and projects with developing countries, and to bring together the best practices and mobilise the resources available from all stakeholders to help close the digital divide. The G8 will seek to promote the creation of a stronger partnership among developed and developing countries, civil society including private firms and NGOs, foundations and academic institutions, and international organisations. The G8 will also work to see that developing countries can, in partnership with other stakeholders, be provided with financial, technical and policy input in order to create a better environment for, and use of, IT.

Source: excerpted from Okinawa Charter on Global Information Society, 24 July 2000.

In response to this, the UNDP initiated a strategy document for Beijing+5 review in the use of ICT for women's empowerment and livelihood.

In 1995, in the Beijing Declaration and the Platform for Action, the use of ICT was mentioned only in the context of media. ICT was viewed primarily as a tool for networking. In contrast, the UNDP strategy for Beijing+5 review places the relevance of ICT in all spheres of commerce and economic activities. The review acknowledges that the information and communication revolution is not only a useful tool for networking but also "has the potential to benefit disadvantaged women by expanding their opportunities to gain increasing access to technology, training and market information, so that they can take advantage of new economic opportunities". The monograph hopes to contribute to strengthening the capacities of national administrators, donor agencies, UN organisations and NGOs in promoting the relevance of gender in policymaking analysis in Malaysia and in neighbouring countries.

two jobs: both domestic and professional, simultaneously. This is the main reason why women generally are not keen to engage in home-based teleworking, even in the software sector, which has a relatively high proportion of female staff in privileged occupational positions. Women in Malaysia, as reflected by results of the project, prefer not to work from home because it does not offer them the liberation that office-based employment does (**Boxes 19 and 20**).

This is also true in India where women's organisations and women researchers have expressed concern that telework is likely to reinforce the stereotype that a woman's place is essentially in her home.

In both countries the option of home-based teleworking is viewed as desirable when childcare facilities are inadequate or when family obligations take precedence over work. However most working women in India and Malaysia would prefer to reduce their commuting time and to work near home, preferably in a neighbourhood or shared facility centre.

Box 19: Some Women Enjoy Teleworking

Ex-teacher Rani, who majored in the Tamil language, taught for one year, got married, and had a child in 1996. Because she could not obtain any domestic help, she resigned from the teaching profession to take care of her child. She is now teleworking from home, working as a Tamil translator for a multimedia company. She stresses that she is working because she loves to, rather than for the money. She is disciplined in her work and meets deadlines. Rani, who owns her own computer and printer, is happy teleworking as it saves time and energy. "Other things can be done at the same time; there is more control in my work and it is more flexible. I would not have chosen to work if I could not do it from home."

Source: Hoon, Ng and Mitter (1999).

Box 20: Some Other Women Feel Concerned

Due to the prevailing notions that home-based work is essentially women's work, it is likely that companies adopting telework systems would prefer women. Women, too, might be tempted to opt for telework as it enables them to manage their multiple roles effectively. While the system provides women with the possibility of managing their homes and earning a living, there is a danger that their contribution to society will remain invisible. It would not change their existing gender inequity in the home or the prevailing stereotypes that domestic work is essentially women's work.

Source: Veena Poonacha and Parvati Rajan, Mumbai, 1996.

In recent years the definition of telework has been extended to include centre-based telework. As the work by Mitter and Ng (1999) in Malaysia has shown, this centre-based telework is more common and will be more so in the coming years. Centre-based telework, like home-based work, relates to women employees who work, with the help of telematics, at a distance from the main site (but not distant from home). She can be part of a team or an individual employee in this form of telework:

3.4. Modes of working

In a policy framework, centrality should be given to women's domestic role -- on the grounds of productive efficiency, as well as of distributed justice. In Asian countries most working women, irrespective of economic class, strive harder than men to combine career and family responsibilities.

The role of motherhood circumscribes women's place in a work culture that as yet remains oriented to male needs and life cycles. In the pre-digital economies, provision of childcare, subsidised by state or employers, provided a partial solution. In the digital economy, teleworking (i.e. tele-assisted home-based working) presents another (potentially better) solution. With a computer and a modem, a woman employee or a freelancer could be connected from her home to a company or its clients to deliver a wide range of information-intensive services such as software, customer care and journalism. While teleworking, women in these occupations need not send children to a crèche, nor commute to work leaving children behind.

Teleworking is a possible mode of working for a wide range of occupations - from accountants, journalists and programmers to data entry clerks, secretaries and saleswomen. This mode of working takes place at a distance from the main site of the company or client, and is suitable for those types of work that need minimum supervision and personal interaction. Teleworking also requires skills in 'self-management' and time management. These qualities are important: employees need the discipline not to be distracted by household chores, nor to overwork. For freelance teleworkers, self-exploitation is a problem, as working longer hours means more money.

In summary, teleworking is effective for those who need little supervision, can maintain the quality of their work, and are privileged enough to have office space at home. Even in the western world, where teleworking has been possible for nearly two decades, this mode of work is common among only those women (and men) who are either high-powered executives and professionals, or employees engaged in a repetitive mundane work.

In Asia, home-based teleworking is a new and untested concept and does not seem to be very popular with either women or management. Evidence for this comes from two pioneering research projects recently undertaken in Malaysia and India.

In Asia, one of the major obstacles is the attitude of management, who are reluctant to hire people wishing to work exclusively from home. Teleworking involves a management culture shift from direct supervision to a basis of trust. This untested approach has yet to take roots in India or Malaysia.

But resistance also comes from women themselves. There have been serious concerns, both in India and Malaysia, that teleworking could lead to women doing

PART 2

GLOBAL DIMENSIONS OF THE DIGITAL ECONOMY

The key characteristic of the digital economy is that it is essentially globalised. In this monograph we give emphasis to three specific dimensions of ICT-led globalisation that affect women's employment and livelihood in Asia:

- Global distribution of work
- Global technology and global market
- Global knowledge

2.1. Global Distribution of Work

Despite growing use of the term 'globalisation', it is not a new phenomenon. The distinguishing feature of current globalisation is that countries, developed and developing, are becoming increasingly connected through trade in digitised information. This trade arises from the relocation of services work, from high-wage OECD countries to low-wage developing countries, particularly Asia. With digitisation of information, it becomes possible to transfer information processing work, both in manufacturing and in services, to offices that are remote from the main premises, both within and across national boundaries (**Box 5**).

Connection between a main site and satellite offices takes place through networks of computers, culminating in the internet. Both services work (e.g. data entry and accounting) and the services component of manufacturing work (e.g. computer aided design of automobiles and textiles) are often relocated to low-wage, preferably English-speaking countries.

These relocated jobs are often offered to, and taken by, women in Asia (whose workforce has a reasonably large pool of literate and computer-literate women). There has been a much-publicised trend in the transference of these jobs to India from the US and from western Europe. Malaysia, not yet so much in the picture, has the potential to be a major recipient of this globally-distributed work.

Box 5: What is E-commerce?

E-commerce refers to those types of trade or commerce in which economic transaction takes place over some form of electronic network. There are two different forms of e-commerce: e-retailing, and business-to-business (B2B) information exchange.

In e-retailing, placing of an order or marketing of goods and services takes place electronically. Delivery may not necessarily be made electronically; it may be traditional, e.g. standard postage (known colloquially as 'snail mail').

In B2B exchanges of information, the entire transaction takes place electronically; this form of e-commerce is much higher in commercial value than e-retailing. Asian countries, especially where there are large pools of computer-literate English speaking female workforce, are likely to gain considerable shares of the B2B market by providing ICT-enabled internet-based services.

The tele-mediated distant work is often described as international telework that contributes to teletrade or B2B e-commerce representing business transactions in information online.

The outsourced jobs from high-wage OECD countries to low-wage Asian countries (e.g. India and the Philippines) cover a wide range of activities, from high-value-added software to low-value-added data warehousing and customer care services. The difference in salaries and wages is the propelling factor: it costs US\$28,000 to hire a medical secretary in the US; the wages of a similar person in India is less than US\$2,000.

The relative wage costs are not the only driving factor for the relocation of work; the demographic trend within OECD countries is also important. OECD countries generally are experiencing a static or a negative rate of growth in population, at a time in which the digital economy requires an abundant supply of youthful knowledge workers.

The average age of an employee in the information processing sectors is 25. The US Department of Commerce, in its 1999 report *The Emerging Digital Economy II*, projects that by the year 2008 nearly half of the US workforce will be employed in IT-related sectors (that is, if the US could produce that many knowledge workers within such a short period of time). The current and projected shortfall in knowledge workers has resulted in a sea change in immigration policies in both the US and in western Europe. The quota for IT workers has been substantially increased, in response to the need for youthful knowledge workers within corporate sectors in these countries.

Giving women training in technology is not enough. Women's success will depend very much on their having business skills and finding a market niche. The training and education should be geared towards giving elite and non-elite women combined training in Lines of Business (LOB) and Lines of Technology (LOT) (**Box 18**).

It will be equally important for policymakers to ensure that the tacit and uncoded knowledge of women, and the materials sources of their business, are not appropriated by the corporate sector in the developed world. Once codified and digitised, knowledge (as well as the material resources) could easily be patented, depriving particularly rural and semi-literate women of their livelihood and ways of life. The intellectual property rights of women in Asia, most of whom have no idea of or access to patenting, should thus be an important area of dialogue in the context of ICT-led globalisation.

Box 18: Information Technology And Business Skills In The Informal Economy

SEWA (the Self-Employed Women's Association), a trade union of the women working in the informal sector, has a paid-up membership of 220,000. SEWA uses IT for developing production systems in the area of crafts, salt production, forest produce and eco-agriculture. Training is given to the group members through a satellite communications system. Members of SEWA also use IT for finding the customers for product display, design and discussion. In addition SEWA uses IT for social security of the members, which includes the facilities for banking, insurance and healthcare.

Source: Renana Jhavala, SEWA, 2000.

3.3. Human resources

Likewise, the cost of gaining computer literacy prevents women from entering the digital economy, either as employees or in self-employment. The Simputer (simplified computer), invented in India, could be a model for democratising access to women in other parts of Asia (**Box 17**).

Box 17: Sub-\$200 Internet Device To Help Non-Literate Users:

In an effort to bring the internet to the masses in India and other developing countries, several academics and engineers have used their spare time to design a sub-\$200 handheld Net appliance. The Simputer, or Simple computer, will enable India's illiterate population to surf the web. The Simputer is built around Intel's StrongARM CPU, with Linux as the operating system. It will have 16MB of flash memory, a monochrome LCD with a touch panel overlay for pen-based computing, and a local-language interface.

Its designers expect the Simputer to be used not only as a personal internet access device, but also by communities of users at kiosks. A smart-card interface to the device will enable the use of the device for applications such as micro-banking.

"We expect to change the model for the proliferation of information technology in India" says Professor Swami Manohar, professor in the computer science and automation department of the IISc. "The current PC-centric model is not sustainable because of the high cost of the PC, and also because we expect that most of the users will not be literate."

(Source: Bytes For All <<http://www.bytesforall.org>>, July 2000).

Women's empowerment in the digital economy depends on their ability to make use of business and work related information (e.g. on market prices for their produce, their rights at work) available on the internet. The information becomes even more effective if computers can translate internet-based information to local languages. In order to make it beneficial to women, it is important that global technology be adapted to local requirements and cultural traditions.

Again, one should not envision women in reactive roles; women of Asia can enrich global knowledge itself with their own local experience. The knowledge, culture and tacit skills of women should be respected and enhanced through the use of ICT. The policymakers should ensure that countries do not lose out through the erosion, in the name of modernity and globalisation, of non-formal knowledge.

The creativity and specificity of women could have high commercial value. Women in Asia, for example, with their tradition of producing high quality designs in the traditional crafts, are equipped to make a success in the area of web site design. The Government of Malaysia, along with other governments in Asia, could focus on this emerging occupation, where women have established comparative advantage and reputation. These skills would be useful not only for selling more Asian products in the local markets, but also for creating new avenues of employment.

Box 6: Estimated Average Annual Salaries Of Computer Programmers In USD For Selected Countries (based on exchange rates before 1997 Asian financial crisis).

Source: Swasti Mitter and Cecilia Ng, 1999.

	1994		1996		Increase in salary 1994-1996
	Annual Salary	As % of US rate	Annual Salary	As % of US rate	
Asia					
China	NA	NA	30,000	54	NA
Hong Kong	35,000	74	38,000	68	9
India	4,000	9	9,000	16	125
Israel	31,000	66	45,000	80	45
Malaysia	14,000	30	16,000	29	14
Philippines	NA	NA	7,000	13	NA
Singapore	NA	NA	32,000	57	NA
NA	NA	NA	31,000	55	NA
Thailand	NA	NA	12,000	21	NA
Europe & North America					
France	46,000	98	52,000	93	13
Germany (West)	54,000	115	61,000	109	13
Ireland	NA	NA	32,000	57	NA
UK	31,000	66	37,000	66	19
US	47,000	100	56,000	100	19

The global mobility of labour is, however, a contentious issue. It poses understandably tense questions, both in the developing countries that export knowledge workers (such as India, Malaysia and the Philippines) and in the developed countries that import IT workers (such as Germany, France, US and UK).

Box 7: What Brings Foreign Companies To The Philippines?

What attracts is the abundance supplies of cheap English-speaking skilled labour. While an NEC software engineer in Japan earns about \$2,700 a month, a counterpart with the same skills in the Philippines earns only \$330. It is agreed that India certainly has a head start but the Secretary of Trade and Industry argues that the Philippines has all the right ingredients to be another major player. The Philippines thus will quickly move from having a cheap labour advantage to a knowledge-based advantage.

The job market in the Philippines is undergoing a geographic shift as Filipino workers move up from being domestic workers and deck swabs to nurses and software programmers.

Source: based on articles in 'Philippines' Financial Times Survey, Financial Times, Tuesday 26 September 2000.

In OECD countries there is some anxiety that the IT sector is becoming dominated by foreign professionals, particularly Asian. In the exporting countries, similarly, there are fears about how the brain-drain will affect the long-term development of the IT sector within Asia.

Box 8: Reversing the "Brain Drain": The Case of Malaysia

In an effort to reverse the "Brain Drain" the Government of Malaysia in budget 2001 will make efforts to attract back ICT specialists of Malaysian origin from abroad by giving them financial and other incentives.

The offshore location of information-processing work offers one solution to this predicament. Cities such as Bangalore, Mumbai and Delhi in India, or Manila and Cebu in the Philippines, now receive a very large volume of these relocated jobs, a large proportion of which are offered to women.

In the case of Malaysia, it will be useful to examine the national strategies followed by India and the Philippines, and to explore whether and how Malaysia could carve out a market niche for globally-distributed work. This search for a market niche will be important, as Malaysia is unable to compete with the Philippines and India on wage costs. It is therefore quality of services and of human resources that is likely to give Malaysia a competitive advantage in the global market for distributed work. The quality of human resources in terms of computer literacy, literacy in English and knowledge of the market, will determine whether a country becomes a winner or a loser in the competition for geographically-distributed work.

3.2. Content

Software content, likewise, presents a barrier to entering the digital economy. This is because 'packaged' software usually embodies the experiences and needs of another culture. This lack of cultural relevance is particularly significant to women as they are, more often than men, deprived of formal training in centres of education. The lack of literacy - particularly in English - could prove a major impediment. Some of the innovative experiments in Asia deserve attention (**Box 16**).

Box 16: Use Of ICT In Eradicating Illiteracy

In India, Tata Consultancy Services (TCS) vice chairman FC Kohli has long harboured a dream of using IT to solve basic social problems in India. Pushed by Kohli, a TCS team has developed a computer-based training system that is designed to teach illiterate adults how to read in a much shorter time than conventional methods permit, and at lower costs. The beta version of the training software developed by TCS has been tested at three locations in Andhra Pradesh, and the results have been very encouraging.

Between 120 to 160 million Indian adults are illiterate. It now takes between six to 18 months to convert an illiterate adult to a state of functional literacy, and depends on trained teachers who are in short supply. It could take over 30 years to eradicate illiteracy going by current trends. If computer-based training methods are used, the nation could be made fully literate in three to four years. An illiterate adult is capable of reading within 10 weeks "at the outer limit" and the system is not dependent on trained teachers.

TCS researchers developed a new pedagogy of teaching language to adults. The basic learning unit is not an alphabet but a syllable. This is based on the theory that adults process both pictorial and aural inputs in a contextual and holistic mode, before breaking it down into smaller units of information.

The R&D team is -- more importantly -- developing an Indian speech recognition engine which will be capable of converting spoken words into written text and vice versa. This could free the process from the Indian language overlaid keyboard, which is a difficult interface to handle even for trainers.

Source: Bytes For All <<http://www.bytesforall.org>>, July 2000.

In contrast, the cost of software presents a problem for economically disadvantaged groups, of which women form the majority. Pirated or illegal copies of software means cheaper access. However, apart from being illegal, pirated software is likely to limit networking potential, since network computers are unlikely to use compatible software. The spread of open-source software - the Linux operating system being perhaps the best-known example - provides a cheaper solution to women and to other disadvantaged groups. Linux and other open-source systems, however, are not as yet easy to assemble and operate; they are not a cost-effective alternative to mainstream commercial software (**Box 15**).

Box 15: What Is Linux?

Linux is an efficient, modern operating system - a UNIX clone that runs on different platforms and supports a variety of software, most of which is free. Linux is providing a cheap and effective alternative to Microsoft's operating system. There is thus already affordable technology that can run on older platforms and open up opportunities for disadvantaged groups and poorer countries. Volunteers from every part of the technical community are contributing to it, as well as some software companies.

Box 9: Human Resource Development Plans for the Government of Malaysia

New skills, such as computer operations, and information management and application, will be incorporated into the education and training curriculum. Increased investments in computer and related infrastructure will be undertaken to ensure students have access to IT applications.

Source: Seventh Malaysia Plan, 1996-2000 *nce development plans for the Government of Malaysia*

It is therefore in the context of improving the standard of human resources that the training and education of women assumes special significance. This is particularly important for Malaysia, that (compared with India and the Philippines), is currently less visible in the league of countries exporting knowledge workers.

Women have already benefited from this dynamics of global job distribution. A large number of these new jobs, such as in banking customer care services, require those social skills that women are reputed to possess. The employers often feel that women work better in repetitive jobs such as those related to data processing.

Stereotyped images of women have, no doubt, favoured women in terms of job quantities. In fact, the projected volume of IT-enabled services (often described as remote processing work) will make IT a far more important source of employment than traditional sectors such as textiles, clothing and electronics.

IT-enabled services are distinct from software services; the former include a variety of activities that offer employment opportunities to women. These women do not come from very poor or under privileged backgrounds. Yet, these are the women who find it more difficult than men to access the expensive training that is required for employment in the software services sector.

Private training institutes, in the face of acute shortages of IT skills, offer a cost-effective training for the international call centres (e.g. training them in American or European accents) and for medical transcription work (e.g. familiarising them with medical terms and pharmaceutical products). Such institutes are proliferating in cities such as Delhi and Mumbai; foreign companies are coming in to establish business links with local sub-contractors who can offer, among other facilities, promises of female knowledge workers in abundance.

The Philippines are also following a similar strategy. The Government of Malaysia, and the corporate sector therein, are -- in order to be a receiver of globally distributed work -- likely to benefit from an evaluation of the experience of training women in other Asian countries (**Box 10**).

In the field of training, the government has a different role from that of the private training centres. As the technology changes, so do the skill requirements of the corporate sector. It is possible that some of the emerging occupations may soon disappear.

Box 10: The Government Of Malaysia's Plan For The Advancement Of Women In The Digital Economy

The strategic thrusts for the further advancement of women during the period are: promoting greater female participation in the labour market through the provision of more flexible working arrangements and support facilities; and providing more educational and training opportunities for women to improve their upward mobility in the labour market

Source: Seventh Malaysia Plan, 1996-2000

Technological advances such as image processing and voice recognition software could make uncertain the future of jobs in data processing or medical transcription. Hence, 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. Only the state can afford to take a non-profit long-term perspective; the private training institutions and the corporate sector understandably have to take a short term and commercially-oriented vision.

Box 11: Types Of Remote Processing Work Coming To Asia

Call centres: multinationals are setting up call centres to answer customer queries from around the world. Since a physical interface with the customer is not required, call centres can be located anywhere, so long as there is adequate connectivity. India has still not become a site for international call centres.

Data conversion: usually characterised by converting passive information into organised data fields on which queries can be run. Of use across industries from health care to oil exploration to manufacturing to the stock markets.

Medical transcription: doctors in the US tape patient information on dictaphones which are transcribed for documentation. Since Indian transcriptionists are far cheaper than their US counterparts, this is emerging as a huge business opportunity.

Back office operations: this category includes a variety of activities ranging from payroll accounting to airline reservations to internal auditing to credit appraisals.

Content development: typically involves creating public domain information for overseas clients. While the most common type involves designing and maintaining web pages, it could also involve things like customer-specific information. A nascent area yet.

Deposition summary: witness depositions in the US usually run into thousands of pages. Legal firms need to summarise depositions, which is a manpower-intensive and time-consuming process. This job is now moving into India.

Insurance claims processing: large insurance companies in the West need to process mountains of claims from their clients. Since the guidelines for doing them are well defined, the claims can be processed from anywhere in the world.

Geographical information systems: this includes creating digitised maps of townships, utilities, roads, and so on. Considered to be high-end remote processing, it is being done by companies like Infotech Enterprises for a variety of clients.

Source: Based on Business World, 7-21 January 1999.

Box 14: Malaysia's Relative Strength In Infrastructure

Category (country)	Main telephone lines		Personal computers		The Internet	
	Availability	Costs	Availability	Costs	Availability	
Unit	per 100 inhabitants	Connection Fee (3 minutes) (US \$)	per 100 inhabitants	Cost of a standard desktop PC as % of per capita GNP	Top level-domain name hosts as % of world Total	Estimated users as % of world total
Year	1995	1995	1995	1997	Early 1998	Early 1998
High Income Economy						
Australia	50.90	89	27.6	10	2.24	3.77
Canada	58.97	24	19.3	9	2.83	5.69
Germany	49.35	45	16.5	7	3.35	7.41
UK	50.24	183	18.6	10	3.33	7.41
USA	62.57	43	32.8	6	over 55	70.35
Asia-Pacific Region						
First-Tier						
Hong Kong	52.96	69	11.6	7	0.22	0.50
Japan	48.80	774	15.3	7	3.94	11.56
Korea	41.47	10	12.1	22	0.41	2.01
Singapore	47.85	56	17.2	6	0.19	0.19
Taiwan	43.07	113	8.3	6	0.60	0.69
Second-Tier						
China	3.35	n/a	0.2	148	0.06	0.63
India	1.29	25	0.1	352	0.02	0.13
Indonesia	1.69	311	0.4	117	0.03	0.10
Malaysia	16.56	19	4.0	33	0.11	0.19
Philippines	2.09	13	1.1	135	0.01	0.13
Thailand	5.86	133	1.5	61	0.05	0.18

Source: ITU, Headcounts (from various sources), Network Wizards, World Bank.

In addition, the expense of hiring trouble-shooters (experts that help when networking technologies fail) excludes a vast number of women and men from the digital domain. However, even in the poorer countries of Asia, the challenge of infrastructure becomes less of a problem as the cost of computer and associated hardware declines dramatically over time.

The cost could, again, be reduced further through communal use of hardware, as offered in telecentres and cyberkiosks.

PART 3

COMBINING GLOBAL WITH LOCAL

Sustainability of the digital economy depends, finally, on a country's ability to cater to its domestic needs and local traditions; in its absence, export-oriented strategies will only create an enclave or a satellite economy, often referred to as the 'bubble economy', that is dependent upon decisions of foreign investors. There is thus, in Asia, justified concern lest that these bubbles burst and IT-related jobs disappear.

This monograph focuses on four distinct areas that could help the Asian countries to achieve a sustainable base and strengthening of the domestic sector of the digital economy; and, in the process, ensuring a larger share of the export-oriented relocated jobs.

The issue of gender assumes importance in the following areas:

- Infrastructure
- Content
- Human resources
- Modes of working

3.1. Infrastructure

The cost of infrastructure relates to computers, software, modems and the network support system. These are all expensive and often beyond the means of an average person in Asia; for example, the cost of a computer equals nearly two year's salary of a professional person in Bangladesh, and a modem costs more than a cow.

In terms of quantity of employment in remote processing work, women dominate. In software and related services, women represent around 20% of programmers in many countries in Asia, although they are not visible. Women's representation in software engineering is thus much higher than in any other engineering profession. However one should not have too optimistic a picture; the survey taken in Malaysia by Dr Cecilia Ng shows that women as a group are still congregated in low-value-added software programming jobs, and are not so visible in the management rank.

Box 12: Malaysian Employment Pattern Of Companies Interviewed By Gender

Company	A*		B		C		D		E		F		G	
Level in organisation	M	F	M	F	M	F	M	F	M	F	M	F	M	F
Management	17	0	12	3	10	0	8	5	1	0	7	6	3	0
Executive	37	22	45	25	12	7	32	18	0	0	6	1	12	5
Non-Executive														
Technical	7	0	9	0	0	0	58	4	0	0	6	0	0	0
Administrative	3	17	0	11	0	3	6	20	0	0	0	0	0	0
Clerical	27	125	0	0	0	0	7	12	0	1	0	3	0	0
Despatch	0	0	0	0	1	0	0	0	0	0	0	0	0	0
Total	91	164	66	39	23	10	111	59	1	1	19	10	15	5

M = male; F = female

Note:

- Management includes: Directors, Managers, Consulting Managers, Assistant Managers
- Executive includes: Systems Analyst, Analyst Programmers, Executives, Network Specialists, Consultants, Internet Technicians, Engineers, Project Leaders, Project Team Leaders, Finance personnel and Accountants
- Non-Executive is divided into two categories: (a) Technical - Technical Writers, Computer Operators, Conversion Operators; (b) Administrative - Administrators/Supervisors, Support Coordinators, Executive Assistants, Secretaries, Receptionists
- Clerical: Data Entry Clerks and Clerical staff
- Despatch
- Company A has a total of 92 full-time employees and 163 contract staff (11 supervisors and 152 clerks)

Source: Mitter and Ng (1999)

It would not be fair to ascribe women's invisibility in software work solely to male prejudices of the management. It is perhaps the domestic role of women that makes them less inclined to take up challenging or demanding jobs. However the Government, to remain competitive in the global market and in the national interest, needs to make it possible for professional women to stay on a career path without jeopardising their quality of life. With this mission in mind the Malaysian Government has supported research on telework in Malaysia to explore whether this mode of employment could allow women to combine the role of home-maker with the challenge of a professional career.

It will be worth monitoring whether the prescribed policies, when implemented, increase women's representation at management and professional levels.

2.2. Global Technology and Access to the Global Market

The link to the global economy comes also from the adoption, adaptation and implementation of networking technologies that were researched and developed in the OECD nations. For the developing world, adaptation is an innovation in itself. Innovation in adaptation enables countries in Asia to gain a comparative advantage in the world trade in information, without incurring the R&D costs associated with invention.

The adaptation of global technology (e.g. in the field of computer-aided design in textiles) could offer better opportunities in the global market for traders in the developing world. Relevant training in high tech ways of doing traditional work could offer new opportunities for women particularly in business and in self employment.

Women in formal employment within IT-related sectors assume a more reactive role as receivers of jobs. Access to global technology, in contrast, gives women a chance to play a more proactive role in the global digital economy, as entrepreneurs.

The use of cellular mobile phones in Bangladesh, for example, has created new opportunities for women who are members of the Grameen Bank. With the facilities of micro-credit from the bank, women members buy mobile phones and sell telephone services to other villagers. The clients of these new entrepreneurs are those who wish to keep in touch with their relatives who work abroad and who send remittances to Bangladesh. Global technology thus serves the needs of a globally-distributed community and a globally mobile work force.

The global market is an important feature of the current globalisation. In emerging and expanding globalised e-commerce markets, modes of advertising are changing fast. In this changing scenario, training in web site design and in access to web sites, provides important avenues of business and self-employment.

The reputation of Filipinas and Filipinos in artistically-creative work, such as web site design, is bringing new sources of business to the Philippines. Internet technologies thus open up new markets in the cyber-economy for women, and facilitate the scope of international NGOs to help market the wares of women traders in Asia.

2.3. Global Knowledge

Women can gain successful entry into the global market if the policy framework becomes geared to giving women knowledge of business and technical know-how. Women's access to global knowledge need not be in narrowly economic spheres. For women, knowledge of reproductive health is, for example, very important for them to function -- in a competitive way -- as an economic agent.

It is women's role as mother and home-maker that, crucially, determines their choice of employment or their success in entrepreneurship. In India, organisations such as Marie Stopes Foundation, use internet technology to disseminate information on contraception, AIDS and other issues relating to women's reproductive health. This is given to women as they finish work at factories, before they go back to their husbands.

In order to be effective and in order to be relevant, the content should be adapted to suit local capacity and capability. The benefits of global knowledge, for example disseminated through distance education, often become limited not because of a lack of access to hardware, but because information content originates abroad, where the social and cultural contexts are totally different.

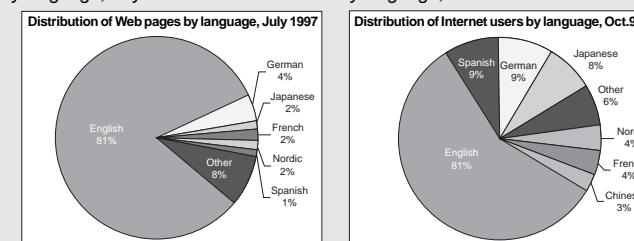
Moreover, most of the distance education material is in English, which is not widely-spoken or used in Asia. There are very few Asian languages that are used in producing internet materials; the issue of translation is thus important to democratise the benefits of global knowledge.

The lack of relevance of content poses a much bigger problem than the expense of hardware. In this context the government, as in the case of Malaysia, should address the challenge of content while promoting 'smart' schools for the benefit of women. The cultural norms of a predominantly Islamic society need to be reflected in the content of literacy and health education.

Box 13: Language Of The Internet

Figure 2.10: Language and the Internet

web pages by language, July 1997 and Internet users by language, October 1998



Source: Alis Technologies / Internet Society <<http://www.isoc.org.8080/palmares.en.html>> (left chart); EMA <<http://www.euromktg.com/globstats>> (right chart)