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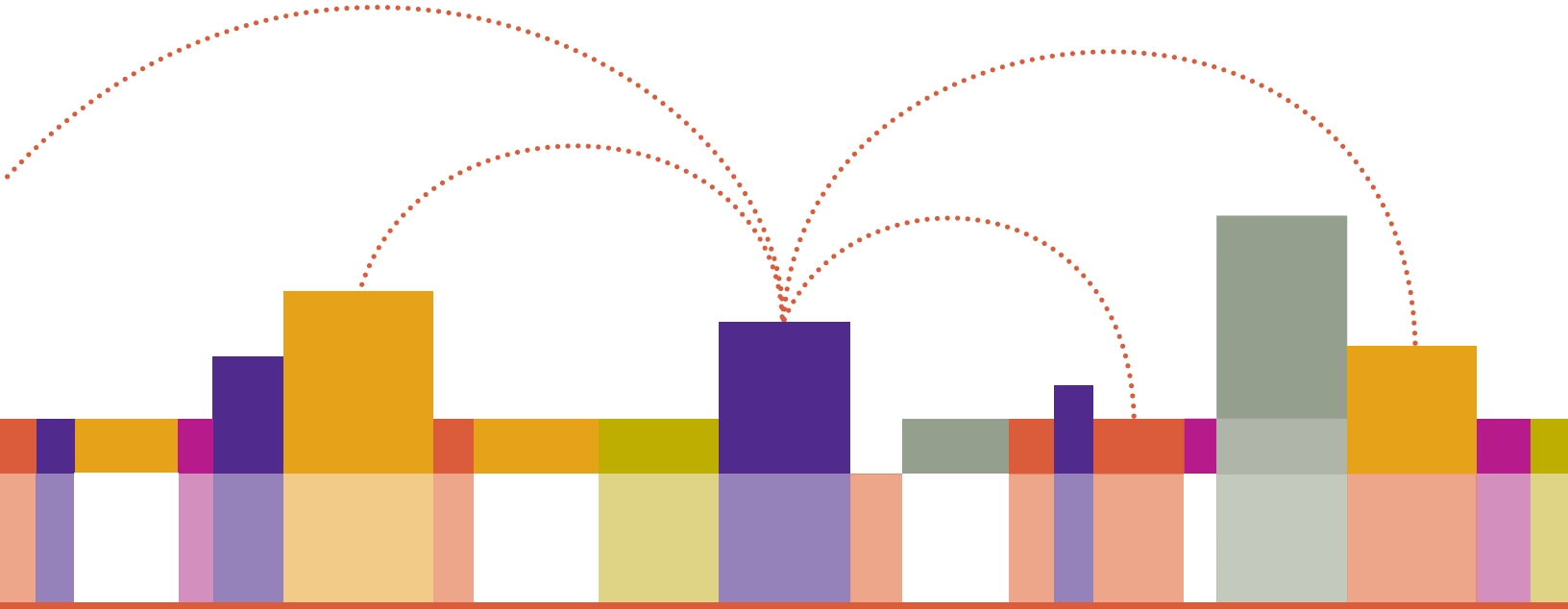
HOW **MOBILE PHONES, COMPUTERS** AND THE **INTERNET** CAN CATALYZE **WOMEN'S ENTREPRENEURSHIP**



INDIA: A CASE STUDY

Anju Malhotra Anjala Kanesathasan Payal Patel

ICRW International Center for Research on Women where insight and action connect

Cherie Blair FOUNDATION FOR WOMEN

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ABOUT THE INTERNATIONAL CENTER FOR RESEARCH ON WOMEN:

The International Center for Research on Women (ICRW) has worked for more than 30 years to empower women, advance gender equality and fight poverty in the developing world. ICRW works with partners in the public and private sectors and civil society to conduct empirical research, build capacity and advocate for evidence-based, practical ways to change policies and programs.

ABOUT THE CHERIE BLAIR FOUNDATION FOR WOMEN:

The Cherie Blair Foundation for Women provides women with the skills, technology, networks and access to finance they need to become successful small and growing business owners, so that they can contribute to their economies and have a stronger voice in their societies.

www.icrw.org

www.cherieblairfoundation.org

IMAGINE a device that fits in your hand that can not only place and receive a call, but also wire funds to a bank account, even turn on electricity at a switch located miles away.

At what point do these mere "wires in a box" and other information and communication technologies (ICTs)—such as computers and the Internet—go from being products to producers of opportunity and income?

Together with our partners at the Cherie Blair Foundation for Women, the International Center for Research on Women (ICRW) explored this question in India. Specifically, our research aimed to analyze how ICTs are triggering entrepreneurial ventures among low-income women and, in turn, altering their life's path.

As a result of the generosity and vision of the Cherie Blair Foundation, this report fills a gap in the literature on how these types of technologies can impel women as entrepreneurs. It builds on ICRW's earlier research that illustrates how technology can be transformative for women—if we engage them in the process of developing, using and distributing it.

Indeed, technology and information can move markets, but it also can move society with great velocity and impact—for the better.

By our very nature, ICRW focuses on solutions. Inspired by the Cherie Blair Foundation's mission, we hope this research leads readers to fresh thinking, to challenge assumptions, to spark imagination and to unleash the potential that propels women and economies forward.

Sarah Degnan Kambou
President, International Center for Research on Women

NOW MORE THAN EVER, technology defines every aspect of our life, the way we communicate, socialize, campaign and conduct business. The information and communications technology (ICT) space is rapidly expanding in emerging economies such as India. Yet, not everyone is able to benefit from this development, and women in particular find it more difficult to access ICTs, which means they are missing out on a host of socio-economic benefits.

The 2012 World Development Report by the World Bank and UNCTAD's 2011 Information Economy Report demonstrate that providing women with ICT tools such as mobile phones can lead to a better quality of life and wider economic growth. However, despite the fact that mobile phones are seemingly ubiquitous, our previous research indicates that there is a significant gender gap in access to mobile technology in South Asia, where a man is 37 percent more likely to have access to a mobile phone than a woman.

Enabling women entrepreneurs to access and use ICTs can help stimulate and expand entrepreneurial activity, provide vital information to accelerate their businesses, reduce costs of money transfers, and on a macro-level—contribute to their country's economic development.

We are delighted to partner with the International Center for Research on Women to better understand how various ICTs can support different levels of women entrepreneurs and to learn from successful ICT-related initiatives currently in place.

I hope you enjoy reading this report as much as I did. Our hope is that it will support more programs seeking to leverage technology so that more women can make the most of ICTs and transform their lives.

Cherie Blair
Founder, Cherie Blair Foundation for Women

acknowledgments

ICRW and the Cherie Blair Foundation for Women recognize the support and input of various people who helped make this research possible. We gratefully acknowledge the leadership and staff of the four organizations profiled as case studies in this paper. We specifically thank the main point persons at these organizations, who facilitated our work with their programs: Santosh Choubey of AISECT; Deepa Mala of Hand in Hand; Chetna Gala Sinha of Mann Deshi Mahila; and S.R. Raja of Sasken.

We also greatly appreciate the input of other external experts in India who offered invaluable insights about the context and realities of women's entrepreneurship and ICTs in India, and specific initiatives being implemented on the ground. These individuals include: Dr. Rajnee Aggarwal (FIWE), Dr. Rakesh Basant (IIM Ahmedabad), Varhsa B.V. (InfoSys), Sucharita Eashwar (NASSCOM), Shachi Irde (InfoSys), Deval Kartik (NID), Zankhana Kaur (TiE Stree Shakti), Rushi Laheri (SEWA), Reema Nanavaty (SEWA), Laura Parkin (NEN), Bhanu Potta (Nokia), C.N. Raghupathi (InfoSys), Dr. Kavil Ramachandran (ISB Hyderabad), Shashank Rastogi (CIIE), Madhu Sirohi (Uninor), Dr. Jeemol Unni (GIDR), Dr. Sridhar Varadharajan (Sasken) and Ninad Vengurlekar (IL&FS ETS).

We also thank the colleagues who helped us carry out this research, in particular, Manisha Gupta and Sonali Singh of StartUp!, for their tremendous efforts in helping to conduct background research, interview experts, and conduct the case study field research. We are grateful to our ICRW colleagues, Sonvi Kapoor, Claire Viall, Sandy Won, Gillian Gaynair and Jeannie Bunton, who have supported the research and production of this paper through their input and expertise.

Lastly, our deepest gratitude goes to the women entrepreneurs in India who took the time to share with us their personal stories as businesswomen and leaders within their communities. Our research would not have been complete without their insights about their experiences and achievements as entrepreneurs.

PHOTO CREDITS: Covers: Mann Deshi; ICRW/David Snyder; page 5: ICRW/David Snyder; page 8: ICRW/David Snyder; page 25: ICRW/David Snyder; page 53: ICRW/David Snyder

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acronyms & abbreviations

AISECT	The All India Society for Electronics and Computer Technology
AWAKE	Association of Women Entrepreneurs in Karnataka
BSNL	Bharat Sanchar Nigam Limited
CIIE	Center for Innovation, Incubation and Entrepreneurship
CCE	Citizen's Center Enterprise
CSC	Common service centre
CSR	Corporate social responsibility
FIWE	Federation of Indian Women Entrepreneurs
GDP	Gross domestic product
GIDR	Gujarat Institute of Development Research
GOI	Government of India
GRB	Gender responsive budgeting
HiH	Hand in Hand
ICRW	International Center for Research on Women
ICT	Information and communication technology
IFC	International Financial Corporation
IIM	Indian Institute of Management
IL&FS ETS	IL&FS Education & Technology Services Limited
IMF	International Monetary Fund
INR	Indian Rupees
ISB	The Indian School of Business
IT	Information technology
IVRS	Interactive voice response system
MFI	Microfinance institution
MSME	Micro, small and medium enterprise
MTNL	Mahanagar Telephone Nigam Limited
NABARD	National Bank for Agriculture and Rural Development
NASSCOM	National Association of Software and Services Companies
NeGP	National e-Governance Plan
NEN	National Entrepreneurship Network
NID	National Institute of Design
NGO	Non-government organization
OECD	Organization for Economic Co-operation and Development
PDA	Personal digital assistant
R&D	Research and development
SEWA	Self Employed Women's Association
SIDBI	Small Industries Development Bank
SIM	Subscriber identity module
SMS	Short messaging service
SHG	Self-help group
TIE	The Indus Entrepreneurs
TRAI	Telecom Regulatory Authority of India
VAS	Voice activated services
VLE	Village-level entrepreneur

connectivity*

HOW **MOBILE PHONES, COMPUTERS** AND THE **INTERNET** CAN CATALYZE **WOMEN'S ENTREPRENEURSHIP**

INDIA: A CASE STUDY

executive summary

Sunita started a silkworm microenterprise to breed and sell cocoons to traders and government agencies. A wife and mother, earnings from her small business supplement her family's income. Her mobile phone has become vital to her work. She uses it to learn market prices for her cocoons. She calls traders to let them know when her next batch of cocoons will be ready. And she can even use her phone to remotely operate a pump that sends well water to her silkworm shed, which saves her a 4 km walk.

The right technology in the hands of a woman entrepreneur yields economic and social benefits for not just her, but her family, community and country. Information and communications technologies (ICTs), such as mobiles, computers and the Internet, can catalyze women's economic advancement by promoting entrepreneurial activity, improving business practices, and breaking traditional gender barriers at home and in the marketplace. But the private sector is only just beginning to see women as consumers; it has not yet realized the potential women entrepreneurs hold as a vibrant business market. The question remains, then: How can ICTs create and revolutionize entrepreneurial opportunities for women?

Our research focused on India to examine how ICTs are changing economic opportunities for poor and low-income women. India is a dynamic setting for three important trends: a rapidly expanding ICT sector, an increased role for women in the marketplace, and an emerging economic and policy environment poised for growth and social inclusion. The confluence of these trends is sparking a range of initiatives that use ICTs to engage women in business.

To better understand how ICTs are fostering women's entrepreneurship, our primary research centered on in-depth studies of four initiatives that illustrate how mobile phones, the Internet and computers can increase women's ability to generate income. These studies also explore the opportunities and challenges of these initiatives and the impact on women's businesses, their lives and their communities. Our analysis found that:

- When given a chance, Indian women seek out and use ICTs to develop their business ventures. They are readily adopting ICTs for business in large part because they recognize that these technologies can not only improve efficiency but increase social status as well.

- Mobile phones, more so than computers or the Internet, allow women to build entrepreneurial success. While women use all forms of ICTs, mobile phones' portability and ease of use make them a particularly friendly tool to support business growth.
- ICTs for women's businesses in India are providing a unique opportunity to empower women on multiple fronts. Women are not only benefitting personally and professionally by incorporating ICTs in their business, they also are serving as ambassadors for technology, by promoting its benefits among their families, communities and other women.
- ICT initiatives that spur women's entrepreneurship in India show great promise. But more investment is needed, given that the four case studies in this report are reaching only a few thousand low-income women entrepreneurs in a land of half a billion women.
- Partnerships among the public, for-profit, non-profit and social enterprise sectors are core to initiatives that link women entrepreneurs with ICTs.
- Sustainability remains a challenge for most initiatives promoting ICTs for women's entrepreneurship. The successful ones are built out of multi-sectoral partnerships, which can be difficult to create and maintain. But the economic and social benefits can strengthen these partnerships and ensure they are sustained over time.
- ICTs are most effective at helping women entrepreneurs save time and access new markets. Technologies like mobile phones allow women to eliminate travel, multitask and coordinate business with domestic responsibilities. However, few initiatives underway for women entrepreneurs use technology to share information, mentor or collaborate with others on business matters.

Women's use of ICTs for business is beginning to shift perceptions about women's roles and positions in society. This is significant in a country like India, where persistent economic and social barriers still prevent women from fulfilling their economic potential. Our findings and recommendations, while pertinent to the Indian context, have relevance for a number of low-income and emerging market economies.

We translate our insights into recommendations for the private sector, government and nongovernmental groups to encourage women to start, strengthen and sustain businesses by using ICTs. These include making women a core part of business strategies, designing policies that incentivize public-private partnerships, and drawing on the expertise and experience of local organizations that are already working to provide poor women with income-generating opportunities. Working together, these efforts can ensure that women like Sunita can become the norm instead of the exception.

I.

INTRODUCTION

"More than at any other time in history, the world is poised to leverage innovation to improve the lives of poor women and empower them to realize their potential."[1]

— International Center for Research on Women, 2009

1.1 CONNECTING TECHNOLOGY, WOMEN, AND ECONOMIC SUCCESS

The potential to advance women economically may be the most exciting transformative feature of ubiquitous technologies in our world. An increasing number of governments, international agencies, and corporations are beginning to recognize that women's economic power is essential for moving economies forward. In addition, they understand the role of information and communication technologies (ICTs) for generating fast-paced growth while providing new and unimagined opportunities for previously disadvantaged populations. But there is only dawning realization of the connection between these technologies and women's economic success.

Technology and women are not often linked, and both historical and current data show that women's access to technology lags considerably behind that of men. The 2010 report, *Women & Mobile: A Global Opportunity,* concludes that even in the mobile phone industry, which has experienced skyrocketing growth, there is a gender gap of 300 million fewer female than male mobile phone subscribers in low- and middle-income countries.[2] The study concurrently provides evidence of how intuitive and useful mobile phones are for women's personal and professional lives—an obvious, but frequently missed observation, given that women also represent two-thirds of the untapped mobile phones market in these countries.

What are ICTs?:

Information and communications technologies (ICTs) include tools, devices, and resources used to communicate and to create, manage, and share information. This includes hardware (computers, modems, mobile phones), software (computer programs, mobile phone applications) and networks (wireless communications, Internet). ICTs are increasingly a necessary part of daily life, supporting basic tasks like SMS texting and wireless banking.

The International Center for Research on Women (ICRW) is focusing on pathways for bridging the gender and technology divide, especially as a route to advancing women economically. ICRW's research indicates that technologies can promote women's economic advancement by reducing barriers or stimulating opportunities that make women more productive, improve the quality of their work, or present a wider range of income-earning opportunities.[3] The report, *Bridging the Gender Divide: How Technology Can Advance Women Economically*, notes that in order to achieve these outcomes, it is important to focus on industries such as ICTs because they can convey rapid, significant economic benefits to a broad range of women while also making their economic activities more socially acceptable. It is equally important, the study concludes, to keep "women at the center" in developing and deploying these technologies: the industry must offer women something that "they can't afford not to use."[4]

1.2 WOMEN, ENTREPRENEURSHIP, AND ICTS IN INDIA

> **"Forget China, India, and the Internet: economic growth is driven by women."**[5]
>
> **— The Economist, 2006**

"Putting women at the center" means that women must be considered integral to, rather than peripheral to, other engines of growth. The question of what this integration could mean becomes especially interesting for emerging markets such as India: what is the potential combined power of a country like India, technologies such as the Internet, and women-run businesses? It is with this premise that we focus this paper on the role of ICTs in advancing women's economic opportunity in India.

The current Indian context of sustained economic growth, increasing prominence of the ICT industry, and a history of civic and policy activity supporting women's rights offers a robust enabling environment for women's entrepreneurship. At the same time, India is still grappling with vast inequalities, historically low human capital investments (especially in women), and significant social and economic barriers to women's employment and enterprise development. This duality is common among several low- and middle-income countries that aspire to greater gender equality and economic prosperity.

This paper examines how access to and use of ICTs are transforming the economic opportunities available to poor and low-income women in India by promoting their entrepreneurial activity. What types of initiatives support small and medium enterprises for women, and through which ICTs? What factors shape a positive connection between ICTs and women's business success? What barriers have been lifted and what opportunities realized? What types of impact are ICT-based initiatives having on women, their businesses, and beyond? What promising pathways are being shaped, and what channels have yet to be explored?

The larger goal of this research is to identify how technology can be leveraged to create and transform entrepreneurial opportunities for women across the globe. The insights presented here are intended to inform programs, policies, and investments that encourage women to start, strengthen, and sustain businesses by adopting and using ICTs. Our recommendations aim to provide direction for stakeholders—development actors, governments, and especially the private sector—on how they can support women's entrepreneurship through ICT platforms, products, and services.

1.3 DATA SOURCES AND ANALYSIS

Our research focuses on women in India who are likely to face disadvantages in accessing technology and starting or growing businesses: poor, lower income women in rural and urban areas. In exploring the connection between ICTs and entrepreneurship for these women, our research draws from three data sources:

- First, we tap information from public documentation on women's entrepreneurship, economic growth, and the ICT sector in India. These sources include academic literature; government, donor, and corporate reports; secondary data; news articles; and web postings. It is important to note that reliable and gender-disaggregated data on women and ICTs, or even women and entrepreneurship in India, are limited, but we have made an effort to pull together disparate sources to provide an overview.
- Second, and in part to overcome data limitations, we incorporate the knowledge-base and perspectives of 18 Indian experts from the ICT industry, research institutions, trade associations, social enterprise efforts, and civil society organizations. We interviewed them in 2011 to learn about initiatives, trends, and actors shaping the ICTs and business connection for poor and lower income Indian women.
- Third and most important, we conducted primary research on four initiatives across India where various ICTs have been at the center of enterprise development for women. We visited these initiatives and spoke with involved parties, including several women participants. Additionally, we interviewed partners from five emerging initiatives that are on the cusp of interesting but less-tested options for women's entrepreneurial success through ICTs.

The paper is structured as follows:

- We begin by providing an overview of key factors in India that are shaping the connection between women's entrepreneurship and ICTs. These include the macro-economic environment, government policies, the role and evolution of the ICT industry, and the nature and extent of women's participation in the formal and informal economy.
- Next, we use these factors to frame a more detailed analysis of the four initiatives for which we undertook primary research. These case studies highlight how mobile phones, the Internet, and computers can increase women's income-generating ability. They also document the scale, scope, and nature of the resulting change in women's businesses, their lives, and their communities. In this section, we also highlight emerging initiatives forging new directions.
- We conclude by synthesizing our findings from the overview of the Indian context and the individual case studies to offer insights on the connection between ICTs and women's entrepreneurship in India. These insights acknowledge the opportunities and challenges presented by ICTs as conduits to Indian women's economic advancement. They form the basis for our recommendations outlining actions that stakeholders can take.

II.

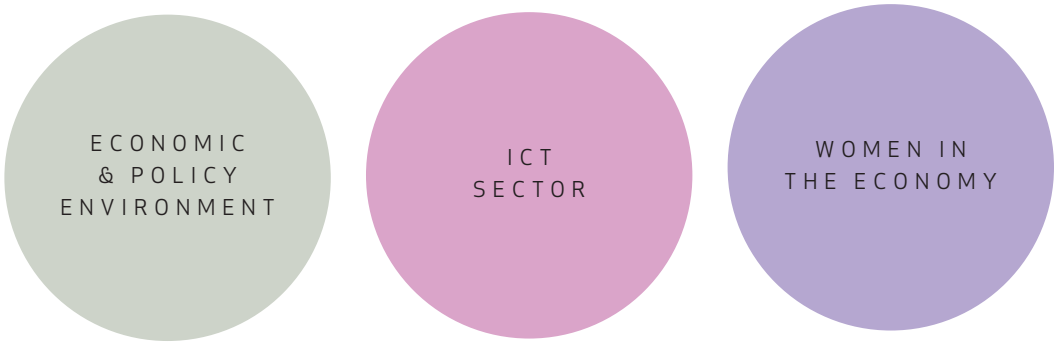
INDIA: OPPORTUNITIES AND CHALLENGES

“ My point is not that the IT industry should do something for the country at large, for that it does anyway. ... My point, rather, is that it can do ... much more. This is partly because the reach of information is so wide and all-inclusive, but also because the prosperity and commanding stature of the IT leaders and activists give them voice, power, and ability to help the direction of Indian economic and social direction. ”[6]

— Amartya Sen

We begin by exploring the Indian context to understand how women are leveraging ICTs for their businesses. Our research indicates that three factors are propelling new investments and broad-based initiatives to benefit women, in general, and women entrepreneurs more specifically:

1. INDIA'S MACRO-ECONOMIC AND POLICY ENVIRONMENT;
2. THE NATURE AND GROWTH OF INDIA'S ICT SECTOR; AND
3. WOMEN'S ROLE IN THE INDIAN ECONOMY



2.1 INDIA'S ECONOMIC AND POLICY ENVIRONMENT

> **"In the past decade, India has witnessed accelerated economic growth ... and has emerged as a global power with the world's fourth largest economy."**[7]
>
> — World Bank, 2010

ECONOMIC & POLICY ENVIRONMENT

Two important macro-level themes co-exist in the Indian political economy. The first is economic growth, a central goal across India, as liberalization, privatization, and globalization drive economic momentum. The second is a commitment to economic, democratic, and social inclusion, which has spurred multiple efforts to ensure that more of India's citizens can access, influence, and benefit from expanding services and opportunities. The two themes are inter-related but not always aligned. India's experience over the past two decades has highlighted the challenge of including more of its large and diverse population in economic progress and gains.

Economic growth in India since the early 1990s has transformed the country, influencing political, social, and cultural spheres, as well as economic opportunities for citizens. With the shift away from protectionist regulations and the gradual privatization of many of India's core sectors, the economy has opened up, fostering foreign investment and leading to a growing private sector and middle class. Over the last decade, economic growth has averaged 7.5 to 8 percent annually, and it's projected at 8.75 percent for 2010–2011.[8] The country's GDP has more than quadrupled since 1990–1991[9]; GDP per capita increased from $309 in 1991 to $1,477 in 2010.[10]

Despite these impressive economic trends, India still ranks among the world's poor countries. It faces significant challenges in ensuring that greater numbers of its one billion-plus population benefit from its growth. Twenty-five percent of India's population—an estimated 300 million people—live below the poverty line.[11] Women continue to face disadvantages. Significant disparities remain on a number of social and economic indicators, and women continue to lag on critical measures such as education and employment.[12]

Recent policy and program efforts by the Indian government reflect a renewed commitment to increasing economic access and social inclusion. The country has invested in expanding education, marked by the Education for All program, which has helped increase overall primary school

BOX 1

India at a Glance

POPULATION:
- 2011: 1.21 billion

GDP
- 1990: $317.5 billion
- 2010: $1.7 trillion

FOREIGN DIRECT INVESTMENT
- 1995–2004: $3.8 billion average per year
- 2009–2010: $30.1 billion in one year

LITERACY
- 1991: 52%
- 2011: 74%

INDEX OF FINANCIAL INCLUSION
- 2008: ranks 50th out of 100

ACCESS TO BANKING FACILITIES
- 2008: Less than 34% of population

POVERTY
- 2011: 300 million people live under poverty line

UNEMPLOYMENT
- 2010: 10.8%

Sources: Government of India, Census (2011b); World Bank (2011b); World Bank (2008); UNCTAD (2011b); Sarma (2008); CIA (2011).

enrollment by 13.7 percent and girl's enrollment by 19.8 percent from 2000–2005.[13] The National Employment Policy (2008), the first of its kind, maps out a program of training, skills development, and employment-generation schemes aimed at increasing both formal sector jobs and improving the quality of informal sector jobs.[14] Access to financial institutions, products, and services is another priority that aims to serve the country's rural economic base. Microfinance schemes have reached millions of Indians—especially women—over the past two decades. Since 2005, the Reserve Bank of India has launched several initiatives to push low-cost, "no-frills" banking services to rural areas and low-income populations.[15]

BOX 2

Self-Help Groups (SHGs): A Platform for Strengthening Women's Economic Position

WHAT ARE SHGS?

- SHGs are savings and credit associations comprised mainly of poor, rural women members

PROVIDE VARIOUS SUPPORT SERVICES TO MEMBERS

- Deliver entrepreneurship training
- Help to collectivize enterprise activity
- Promote access to financial services and products

MAIN MECHANISM OF EXTENDING MICROFINANCE

- 2006: More than 33 million SHG members (from 2.2 million SHGs) have accessed financial services from banks

Sources: Isern et al. (2007); Wilson and Sinha (2006).

In addition to policies targeted at marginalized groups, the Indian government has also tried to deliberately ensure that women's interests are addressed within national policies. For example, the most recent national five-year plan (2007–2012) emphasizes the need for gender responsive budgeting (GRB) in all government development programs, a step which goes beyond previous initiatives that were limited to supporting women's self-help groups and microfinance efforts.

These policies, while challenging to implement, embody underlying currents that are encouraging new opportunities for disadvantaged groups, including women. The public sector's efforts to make economic growth more socially inclusive is supported by India's vast range and number of civil society organizations. Increasingly, the private sector is also recognizing the untapped economic opportunity among India's millions at the "base of the pyramid," while social entrepreneurs are beginning to forge bridges between public, private, and non-profit endeavors.

2.2 INFORMATION AND COMMUNICATIONS TECHNOLOGY SECTOR IN INDIA

> **"The rapid emergence of the information and communication technology (ICT) sector has placed India on the global stage ... creating new choices and opportunities in the development process."**[16]
>
> **— Organization for Economic Co-operation and Development, 2010**

An important component of India's recent economic growth has been the emergence of a strong and growing ICT sector.[a] In the past two decades, the country has opened up its technology and telecommunications industries to massive investments by the private and government sectors.[17] The resulting growth, both in terms of revenue generated and services provided, has translated into a range of benefits for the country and, equally critically, the end-users of mobile phones, computers, and Internet-based products and supporting technologies.

ICT SECTOR

New policies and business opportunities, especially in wireless communications and products, have spurred fierce competition over the past 10 years, involving numerous government ministries, regulatory agencies, state-owned corporations, and private sector companies. India's ICT sector has exploded since the introduction of mobile and Internet services in the mid-1990s. Multiple Indian and international companies, including network providers such as the state-owned BSNL and MTNL, Bharti Airtel, and Reliance Communications, and hardware and software developers such as Nokia and Motorola, are all looking for market space in one of the world's fastest growing industries.

The ICT sector's contribution to India's GDP has been steadily increasing from 3.4 percent in 2000–2001 to 5.9 percent in 2007–2008.[18] India's information technology (IT) industry, which includes hardware, software, and supporting services, reached $71.7 billion in aggregate revenue in fiscal year 2008-2009.[19] The cellular services market in particular grew by 16.6 percent in 2010-2011 from the previous year.[20] From January to March 2011, the Telecom Regulatory Authority of India (TRAI) reported a total telecommunications subscriber base of 812 million people.[21] In addition, the value-added services market, providing the technology and networks for more utility-based services such as m-commerce (including mobile banking), is poised to expand significantly, with projected sales of $12.25 billion in 2015.[22] Taken in total, the economic power and potential of the overall ICT sector in India is staggering.

[a] The Indian government notes that India's ICT sector is a "convergence of different electronic tools that facilitate the functions of information processing and communication, including transmission and display." Source: Ministry of Statistics and Programme Implementation (2010).

2.3 WOMEN'S ROLE IN THE INDIAN ECONOMY

> **"India's growth rate can make a quantum jump of 4.2 percent if women in the country get equal opportunity in the core sectors of the economy."**[23]
>
> **— Lakshmi Puri, Assistant Secretary General of UN Women**

WOMEN'S ROLE IN THE ECONOMY

Women's economic power in India is perhaps one of the country's most untapped resources. Historical rates of economic participation by women in India have been low compared to many parts of the world, and have failed to rise significantly over the past few decades.[24] Recent national-level data indicate that women's workforce participation, which includes self-employed work, is around 26 percent in rural areas and only 14 percent in urban areas.[25] This rate has declined by 1.7 percent between 2004-2005 and 2009-2010.[26]

BOX 3

Gender Disparities in India

WOMEN'S LABOR FORCE PARTICIPATION
- 2009-2010: Rural – 26%; Urban – 14%

GLOBAL GENDER GAP INDEX
- 2011: ranks 113th out of 135

WOMEN-OWNED MSMES
- 2006-2007: 2.1 million, or 8% of all MSMEs in India

LITERACY
- 2011: Female- 66%; male- 82%

GENDER GAP ON PRIMARY SCHOOL COMPLETION
- 1999: 16.1%
- 2008: 1.1%

GENDER GAP ON SECONDARY SCHOOL COMPLETION
- 1999: 15.3%
- 2008: 7.7%

WOMEN AS PERCENT OF COLLEGE GRADUATES
- 2010: 42%

WOMEN AS PERCENT OF SCIENCE GRADUATES
- 2010: 44%

Sources: Chandrasekhar and Ghosh (2011); World Economic Forum (2011); Development Commissioner MSMEs (2009); World Bank (2011a); Hewlett and Rashid (2010); Government of India, Census (2011).

One contributing factor has been a declining, but persistent gender gap in schooling. Despite steady gains made in education, women and girls still fall behind their male counterparts on several key educational indicators. The World Economic Forum's 2011 Global Gender Gap Index,[b] ranks India 121 out of 135 countries on the educational attainment sub-index, due to persistent gender disparities in primary- through tertiary-level education.[27] Overall, however, female education rates have substantially improved, particularly over the last decade. The gender gap in primary and secondary school completion rates has decreased in the last decade. Moreover, a growing number of women are obtaining tertiary education and increasingly represented in the sciences.

In addition to the education system, the workplace environment also presents challenges for women, especially in accessing higher positions and leadership roles.[28] In a recent survey conducted by

[b] The World Economic Forum's Global Gender Gap Index measures the magnitude of gender inequality by country. The index is based on indicators of gender-based disparities across four key sub-indexes: economic participation and opportunity; educational attainment; political empowerment; and health and survival.

Nielson among women in 21 countries, 55 percent of Indian women interviewed said they experienced discrimination in the workplace that was enough to make them consider being less ambitious in their professional development or quitting their positions.[29] More starkly, the *Corporate Gender Gap Report, 2010*,[c] shows that, at 23 percent, India has the lowest percentage of female employees among private sector workers in the world's 20 largest economies.[30] Furthermore, 60 percent of the surveyed companies in India reported that women represented 10 percent or less of their middle management employees, and 84 percent stated that women made up 10 percent or less of their senior managers.[31]

BOX 4

Barriers to Women's Business Success in India

- Social Norms
- Time
- Capital and Financing
- Skills and Training
- Access to Markets
- Business Networks

At the same time, it is important to recognize that low rates of women's economic participation in India are a statistical artifact since women often undertake economic activities that are underrepresented in formal statistics of both employment and entrepreneurship. Low women's workforce participation rates in national surveys suggest that in settings where economic activity is more formalized, women's work may not be counted. In official measures of entrepreneurial engagement, women are even less visible. They own approximately 2.1 million, or only 8 percent, of the 26.1 million micro, small, and medium enterprises[d] (MSME) in India.[32] Women's businesses, like the rest of the MSME sector in India, are concentrated in the informal economy and thus are often unregistered and undercounted.[33] Women's productive work is also frequently underreported because it is difficult to separate it from their household work.[34] Moreover, experts suggest that in many cases women may run enterprises that they do not own, or they may own surrogate enterprises that are actually run by other family members.

In addition to the overall challenges of being counted, women entrepreneurs face specific social, economic, and bureaucratic obstacles to entrepreneurial success.[35]

Social Norms

Traditional social norms regarding women's mobility and their primary role as family caretakers limit women's participation in paid economic work. There are many official and public spaces that are not considered appropriate for women to frequent, or where they feel discomfort or suffer harassment. There are distances that women are not expected to travel alone, and most women need permission and cooperation from family members to undertake a job or start a business, usually prioritizing their responsibilities as daughters, wives, and mothers. The literature and interviews with experts on entrepreneurship in India confirm that social expectations and domestic responsibilities often preclude women from entering into entrepreneurship and challenge the capacity of women who do defy these odds to effectively run and grow their businesses.[36]

[c] The World Economic Forum's *Corporate Gender Gap Report* measures gender-based disparities in economic participation within the private sector, by industry as well as country. Data is collected from surveys completed by corporations on the six key themes: representation, measurement and target-setting, work-life balance, mentorship and training, barriers to leadership, and effects of the economic downturn.

[d] The smallest business categories for which the Government of India tracks data is the MSME classification: micro, small, and medium enterprises, which include manufacturing and service enterprises. Each category is defined by level of investment. Investment levels for the manufacturing sector are: microenterprises, up to 2,500,000 Indian rupees (INR); small enterprises 2,500,000 -50,000,000 INR; and medium enterprises 50,000,000 - 100,000,000 INR. Investment levels for service enterprises are slightly lower for each category: up to 1,000,000 INR for microenterprises; 1,000,000 - 20,000,000 INR for small enterprises; and 20,000,000 - 50,000,000 INR for medium enterprises.

Limited Time

As in much of the world, women in India carry the double burden of household and productive work. Household tasks occupy significant time for women, particularly those who are poor or living in rural areas, because basic facilities such as access to clean water or efficient fuels are often lacking. For example, 72 percent of rural households and 29 percent of urban households in India lack access to piped water,[37] and in most areas, fetching water is women's work.

Limited Capital and Financing

Studies on women's entrepreneurship in India indicate that access to finance is one of the most difficult obstacles female entrepreneurs face.[38] Women-run MSMEs are disproportionately more credit-constrained than men's businesses.[39] Women often lack assets to supply collateral, bank officials frequently discriminate against them, and women are not equipped to navigate the rules, both stated and unstated, of obtaining credit.[40] Poor financial literacy, a lack of credit history, and limited previous business experience also reduce women's credit-worthiness.[41] A recent study found that although nearly all public sector banks have special loan schemes for women entrepreneurs, "low awareness and a passive mindset ensure that there are very few takers."[42] The most common sources of finance for women entrepreneurs are family and friends.[43]

> **"Many women are not aware of the markets open to their businesses, including corporate markets, government markets, and global markets."**
>
> — Sucharita Eashwar,
> Senior Director of NASSCOM

> **"We are seeing the emergence of women entrepreneurs in small towns as well as in cities, and many of them have the acumen, fortitude and will to see their businesses succeed and achieve their potential."**
>
> — Panel of Experts
> TiE Stree Shakti

Limited Skills and Training

Women entrepreneurs in India are less likely than men to have formal and relevant business education or previous experience that they can use to develop their own enterprises.[44] While there has been an increase in young women accepted to India's business schools, their numbers still lag behind their male peers: at the Indian Institute of Management in Ahmedabad, only 11 percent of the students admitted in 2011 were female (although this is more than double the proportion admitted four years earlier).[45] Overall, women make up only 25 percent of graduates in the business and management fields.[46] Business experts note that women entrepreneurs often lack the "necessary skill and competency" for running a business, such as developing a business plan, negotiating with banks, or managing business inventory.[47]

Limited Access to Markets and Information

The range of markets available to women running smaller businesses, especially in rural areas, tends to be small and limited both in terms of geography and diversity.[48] Women also lack sufficient access to market information about prices, inputs, and competitors, as well as to support services and resources that they can leverage to be more successful

in building market linkages.[49] In some industries and sectors, such information may not even exist or if it does, it is not readily available. As a result, women entrepreneurs also often lack the know-how and the resources to market themselves effectively or adequately advertise their products and services.[50]

Limited Business Networks

The vast majority of Indian women entrepreneurs lack effective networks that can support learning and the leveraging of meaningful resources such as market knowledge, business advice, and mentorship. The best network platforms currently include women's trade associations (such as TiE's Stree Shakti and FIWE), self-help groups, or microfinance programs. These facilitate skills development, access to markets, and credit. However, they are often limited to a female domain and not linked to the broader economy. They also tend to cater only to women of certain economic strata or geographic region.

BOX 5

The "Average" Woman Entrepreneur of a Registered MSME in India

- 25–50 years old
- Married with children
- Middle and lower-middle income
- Motivated by need to earn income for family
- High social capital of friends and networks
- Financial support from family
- Lacks business training and experience

Sources: Shastri and Sinha (2010); Handy et al. (2007); D'Cruz (2003), in Handy et al. (2007); Kitching, Mishra and Shu (2005).

Despite the apparent limitations women face in the economic sphere, they still make significant contributions to the Indian economy. Overall, MSMEs contribute a substantial 8 percent of India's GDP; this includes the subset of MSMEs that are owned by women.[51] During interviews for this research, entrepreneurship experts in India agreed that more women are becoming entrepreneurs, and there is still largely untapped potential for enabling greater numbers of women to enter and prosper within this space.[52]

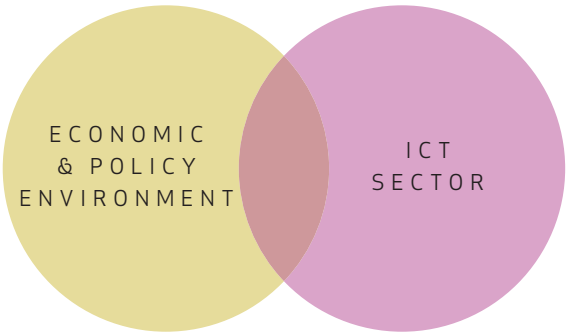
The importance of recognizing, supporting, and advancing women's economic contributions has been at the forefront of civil society activities in India for some time. India has a thriving women's movement that has advocated for policies and resources that can address the disadvantages women face in the economic sphere. In the last two decades, collectivization, legal reform, microfinance, and self-help groups have helped to achieve progress for women workers and entrepreneurs.

KEY INTERSECTIONS

What makes India particularly exciting is the dynamic interaction between the economic and policy environment, the growing ICT sector, and the evolving role of women in the economy. We consider each pairing in turn, highlighting trends that enable and sometimes inhibit women's entrepreneurial achievement.

2.4 INDIA'S ECONOMIC AND POLICY ENVIRONMENT AND THE ICT SECTOR

> **"... The development of the ICT sector in recent years has been remarkable ... India can harness the benefits of the knowledge revolution to improve its economic performance and boost the welfare of its people."**[53]
>
> — World Bank, 2005



BOX 6

ICTs in India: Furthering Economic Growth and Social Inclusion

- Increasing share of formal sector employment
- Building skills and talent pool beyond major cities
- Opportunity for aspiring entrepreneurs
- Expanding mobile phone access to the masses
- Limited but growing base of computer and Internet users
- E-governance initiative to get basic democratic benefits to all

The ICT industry is creating new types of economic activity, generating employment, and enhancing economic efficiencies. Networks, products, and applications developed through the ICT sector are important tools supporting the Indian government's goal of social inclusion (see Box 6).[54] ICTs enable the delivery of key services and information to India's citizens, support interface between the government and civil society, and foster greater transparency and accountability. It is important

to note that the rapid and competitive growth of the ICT sector in India has had its challenges with allegations of poor regulatory oversight and corruption. Despite the implied need for greater transparency and fiscal responsibility, it is clear that the ICT sector—fueled by both the public and private sectors—will be a key part of India's economic and social engines.

1. ECONOMIC GROWTH AND ICTS

India's ICT industry generates a significant number of jobs. A 2006 study found that the mobile phone industry created 3.6 million jobs directly and indirectly. A recent study estimates that by 2012, the telecom sector will create direct and indirect employment for 10 million people.[55] The ICT industry has also helped to expand the diffusion of skills and opportunity in the country, spreading business operations beyond the larger metropolitan areas, and improving the supply of talent and the development of physical and social infrastructure in smaller cities. While the ICT industry generally employs more men than women, there are signs of change. Within the telecom sector, companies are increasing the percentage of women employed in entry-level and management positions.[56]

The shift of focus from physical capital to intellectual capital, along with the influx of new funding sources, has enabled an increasing number of aspiring entrepreneurs to launch businesses. While the success of these entrepreneurs has generated even more interest within India's middle class, it is unclear whether the heightened entrepreneurial spirit and increased opportunities are diffusing to those at the lower levels of India's complex social structure or to those facing larger structural disadvantages, particularly the millions of women who fit within both of these groups.

2. SOCIAL INCLUSION AND ICTS

ICTs in India are serving an ever-increasing proportion of India's population, and the rapid expansion of ICT services, particularly in terms of wireless networks, is increasingly reaching some of India's traditionally underserved groups— rural communities and women.

Mobile Access

Today, India's telecommunication sector is one of the world's fastest-growing industries, largely due to the rapid expansion of its mobile products and services. Early 2011 data show a wireless subscriber base of 812 million, reflecting an increase of almost 39 percent from the previous year.[57] Rural areas, home to two-thirds of the population, contain only 33.7 percent of wireless users.[58]

Recent survey research commissioned by GSMA Development Fund and the Cherie Blair Foundation for Women provides a gendered breakdown of mobile phones users and owners in India, and shows that only 28 percent of women own a mobile phone compared to 40 percent of men.[60] Another 20 percent of females were found to be "borrowers" of mobile phones through family or friends.[60] Access and use among women still favors those with higher education and income levels, as well as those who live in urban areas. For example, 63 percent of total women users of mobile phones were urban residents.[61]

TABLE 1: Mobile Phone Access in India by Gender

	MALE	FEMALE
Total Population (millions)	**618.5**	**579.2**
Mobile Phone Users (millions)	**N/A**	**274.9**
Mobile Phone Users as Percent of Total Population	**N/A**	**47%**
Mobile Phone Owners (millions)	**249.5**	**161.3**
Mobile Phone Ownership Percent of Total Population	**40%**	**28%**

Source: Vital Wave Consulting survey data sets (2010).

Mobile Banking

The Indian government's commitment to extending financial services to disadvantaged groups along with the advent of affordable telecommunication technologies and applications, has opened up the development of mobile banking facilities, particularly in urban areas. The Reserve Bank of India has authorized 32 banks to provide mobile banking services; 21 of them have begun operations.[62] Banks such as ICICI Bank, HDFC Bank, State Bank of India, and Bank of Baroda have partnered with telecom companies such as Reliance Communications to create financial products and services. These include savings, loans, credit, and payments that can be delivered through simple, secure, and widely-accessible mobile platforms.[63] The fact that India has a large and well-developed base of microfinance institutions for women, often through self-help groups, means that there is a readily accessible platform for reaching large numbers of women through such initiatives.

Computer and Internet Access

Access and use of Internet services in India is predominantly computer-based, as mobile Internet services are still limited. India's national five-year plan (2007-2012) promotes infrastructure development and expanding broadband access,[64] but also recognizes the challenges of limited access to and high costs of electricity. In 2008, over 400 million Indians did not have access to electricity, with electrification rates of 93.1 percent in urban areas and 52.5 percent in rural areas.[65] Even for those with electricity, many contend with poor quality of electricity supply, thereby limiting regular and reliable access to the Internet.

Currently, Internet use largely occurs in urban areas and is restricted to those who are literate in English and familiar with personal computers. Although usage numbers are considerably lower than on the mobile front, an increasing number of Indians are gaining access to Internet services. The 2007 Internet in India (I-Cube) report looked at 30 cities across the country and identified 32 million active Internet users (defined as those who use the Internet at least once a month), with an increase of almost 11 million users over one year.[66]

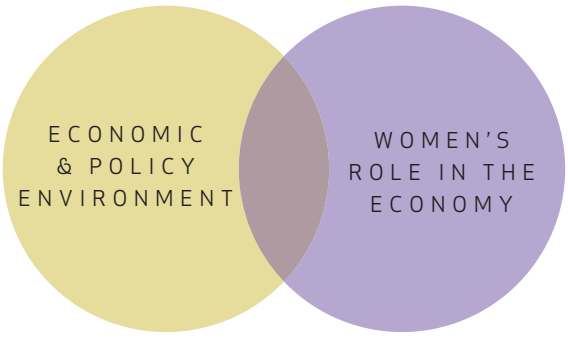
The I-Cube report suggests that the gender gap in Internet use is much greater than for mobile phone use. Of the 32 million users, 11 percent were working women ages 18-45, and another 6 percent were non-working women.[67] A recent report from UNCTAD also indicates that computer use among smaller enterprises— which is what women's businesses tend to be —is much less common than in larger enterprises: almost 75 percent of enterprises with 50-249 employees use computers, while this is true for less than 30 percent of businesses with 0-9 employees.[68]

E-Governance

In May 2006, the Indian government launched the National e-Governance Plan (NeGP) to deliver benefits of the ICT revolution to average citizens and support democratic principles of transparency and public access to information and services. The plan promises to establish 100,000 common service centers (CSC), run by local village-level entrepreneurs (VLE), to provide computer and Internet services to clusters of six villages.[69] Some CSC offerings include access to birth, death, and land records; IT services; e-commerce; health and education information; and market research. Through partnerships with businesses that wish to tap emerging or rural markets lacking ICT infrastructure, NeGP has opened several channels of entrepreneurship for women. As one expert notes, the NeGP CSC program has the potential to "ramp up women's entrepreneurship in emerging pockets of the country," but only with an active effort to enhance the CSCs' chances of success. Currently, most CSCs are not profitable to the entrepreneurs due to the lack of appropriate content that can generate business and increase revenues.[70]

2.5 ECONOMIC AND POLICY ENVIRONMENT AND WOMEN'S ROLE IN THE ECONOMY

> **"Women constitute about half of our population, and until they are empowered, we will have an unfinished task on hands... Real development cannot take root if it bypasses women, who represent the very pivot around which social change takes shape."**[71]
>
> **— Pratibha Patil, President of India**



Increasingly, the government and the private sector in India recognize that integrating women more fully into business and economic development processes is essential for the country's economic success. In the past, these efforts have focused on the poorest women and "women-specific" platforms. Our research suggests that attempts to strengthen women's roles in the economy as entrepreneurs and employees on a broader scale are only beginning to be maximized.

Historically, the government has emphasized microenterprise development as an effective strategy to support women's economic participation. More recently, other options such as training centers and business development support services for women entrepreneurs have emerged. The Small Industries Development Bank of India, established in 1990 to advance small-scale industry, is now promoting entrepreneurial training programs for women in more than 20 states nationwide. Recent government industrial policy also emphasizes the need to promote women's entrepreneurship in small-scale industries. The export sector is another area receiving attention, with the Trade Related Entrepreneurship Assistance and Development scheme beginning to focus on women. Two specific platforms are emerging as especially important for women's businesses:

- **FINANCIAL INCLUSION:** In recent years several banks have enacted women-specific initiatives. For example, the Bank of India, the Oriental Bank of Commerce, and the State Bank of India (SBI) have developed special low-interest, no-collateral loan schemes for women entrepreneurs. SBI and Canara Bank have also created branches designed to service women entrepreneurs.[72] As part of the financial inclusion effort, there has also been a proliferation of microfinance programs and banking schemes aimed at increasing financial literacy and access to loans. Moreover, innovations related to mobile banking have strong potential to benefit women entrepreneurs, particularly those at the microenterprise level.

- **WOMEN'S SELF-HELP GROUPS:** Civil society and government and donor investments in the last three decades have been successful in building and expanding a vast network of self-help groups in India. The government has made an effort to allow banks to provide credit and savings products directly to self-help groups rather than individual women. The National Bank of Agriculture and Rural Development (NABARD) estimated that as of March 2006, more than 33 million self-help group members, mainly women associated with 2.2 million self-help groups had accessed financial services from banks.[73] Self-help groups are now the primary mechanism for extending microfinance in India.[74]

Several of the experts we interviewed noted that the government could take a number of additional steps to facilitate women's business efforts. An important step would be to streamline what is currently a complex set of registration procedures, thus making it easier for all entrepreneurs, including women, to formalize their businesses.[75] Another suggestion was to make parallel "set asides" for women in the Public Procurement Policy as is currently mandated by all ministries for the MSME sector (20 percent per a 2010 policy).[76]

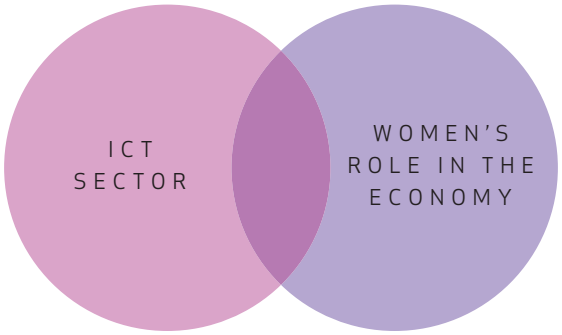
In addition to the government and the financial sector, national and state-level civil society organizations in India have been supporting women entrepreneurs through business training, enterprise development services, and networking opportunities. These include the Federation

of Indian Women Entrepreneurs (FIWE), the National Entrepreneurship Network (NEN), and the Association of Women Entrepreneurs in Karnataka (AWAKE). Also, the Indus Entrepreneurs (TiE), a network of Indian entrepreneurs around the world, launched its Stree Shakti ("woman power") initiative in 2009 to create an exclusive network for women entrepreneurs across India, although it caters more to middle-class businesswomen.

Private sector efforts to spur women's entrepreneurship are more nascent. Companies such as Nokia, Idea Cellular, InfoSys, NASSCOM, and Cisco Systems, Inc. are reaching out to non-profits, academia, and social enterprises as well as national and state-level women's organizations to build partnerships and networks to advance women's business success. Goldman Sachs has linked with the Indian School of Business to implement the 10,000 Women program in India to provide business training to women running small and medium enterprises. Social entrepreneurs who are interested in developing innovative options for fostering women's economic opportunity are finding resources through organizations such as Ashoka and its fellows program. However, such initiatives are still few in number and small in scale, and largely target women entrepreneurs from middle and higher income backgrounds.

2.6 ICT SECTOR AND WOMEN'S ROLE IN THE ECONOMY

> **"What is very clear for us is that ICT providers not only need to tailor products and services that are user friendly to women—but for true impact, they need to be designed to indirectly impact the status and engagement of women with the world around them, leading to knowledge empowerment."**
>
> **— Ninad Vengurlekar, Vice President of IL&FS ETS**



The ICT sector in India has created new opportunities for women as employees or entrepreneurs as well as consumers of ICT products and services. The rush to find capable workers and develop new products has involved women as well as men, but not equally. Women as customers of ICT offerings

are emerging on the corporate radar, particularly as companies seek to enhance their market position or meet corporate social responsibility goals. Deliberate attention to women as entrepreneurs is less evident, perhaps reflecting the challenge of coordinating across players that can develop, test, and market products for business women.

1. WOMEN'S PARTICIPATION IN THE ICT SECTOR

As noted earlier, the ICT industry has generated millions of employment opportunities in India, and data suggest that women have benefited. Female employment in the ICT sector was estimated to be about 35 percent in 2008, which is much higher than for the country in general.[77] A study conducted in 2008 projected that the female workforce in the industry would grow to 45 percent after 2010-2011.[78]

When compared to other service sectors, some sub-sectors within the ICT domain offer women higher salaries and are perceived to provide a safe and friendly work environment.[79] The relative success of integrating women into some ICT sub-sectors has inspired a large number of young women to enroll in professional education courses, especially computer engineering; 40.4 percent of the entrants into institutions of higher education in 2005 were women.[80] There are also indications that women's participation in India's ICT economy has improved their earning potential and bargaining power at home.[81] More women work in IT companies located in cities away from their families and male relatives. This has had the triple effect of enhancing their social mobility as well as their ability to make choices and challenge power relations.

Despite progress, significant barriers continue to limit women's opportunities for economic success in the ICT industry. For example, of all women employed in the IT sector, only 28 percent are at a manager level or higher.[82] Many gender stereotypes and norms restrict the advancement of women within ICT companies, including: the lesser bargaining power of women; multiple demands of family, work, and social responsibilities; the lack of mentors and access to the "old boys' network"; and frequent exposure to sexual harassment in the workplace.[83]

BOX 7

ICTs as Tools to Benefit Women

- Provide inexpensive, efficient, current information
- Create communication channels regardless of language and literacy limitations
- Address safety concerns
- Help cultivate and expand market reach
- Reduce need for travel and transportation
- Support business efficiency and performance
- Strengthen networking opportunities

There is currently no reliable data on women entrepreneurs in the ICT sector, reflecting the relative newness of businesswomen in the field. However, experts noted that the ICT sector is facilitating new business options for women—both in the sector or support services and products. One expert explained, "Opportunities have increased—multiplied especially for women in IT, services and retail—there is a definite buzz."[84]

2. WOMEN AS AN ICT MARKET SEGMENT

While the use of mobile and Internet technologies is attractive to many market segments, including women, their adoption rate among women has been lower, in part due to a number of obstacles that such technology adoption presents. ICRW's previous research[e] indicates that while perceived to be gender-neutral, such technologies are often harder for women to adopt because of cost, literacy requirements, and lack of familiarity in use. Moreover, since technology often carries high value and status, it may be considered socially "beyond" women, or inappropriate for them because of the exposure it provides to the wider world.

As the ICT sector in India—including mobile phone operators, device manufacturers, and mobile voice activated service (VAS) providers—has begun to focus more on women as a segment of its consumer market, it is beginning to address some of these barriers by designing more devices and applications that meet women's specific needs. For example, the barriers of literacy and local language accessibility are increasingly being recognized as problematic for market expansion, and efforts have been made to address them. In late 2009, Indian content developers created the technology to enable the use of 22 Indian languages via short messaging service (SMS), helping to expand and improve mobile literacy and access among lower income users, especially women, who may prefer or only be able to effectively communicate in local languages for both personal and business purposes.

> **"For women entrepreneurs, a phone connection by itself is not a solution ... The device manufacturers, more than the operators, are beginning to see the possibilities of creating the kind of tools that will enable women entrepreneurs in rural areas."**
>
> **— Bhanu Potta, Global Product Manager, Nokia**

Voice activated service and more consumer-relevant content are other evolving innovations aimed at reaching "last mile" consumers such as rural women. ICT companies such as Cisco and Uninor are working with civil society organizations to develop mobile-based helpline and informational portals. These applications target rural and female users who can receive voice or SMS messages that provide information and advice on issues such as agriculture, domestic violence, health, entrepreneurship, or finance. Some of these portals allow for two-way communication, thus enabling users to seek specific information relevant to their lives. Several years ago, Idea Cellular designed mobile-based safety features on a subscriber identity module (SIM) card exclusively for women consumers.[86] One of the features allowed women to send a "Please call immediately" SMS to three designated people. Another feature allowed women users to make calls even with a negative airtime balance.

Some of these efforts go beyond addressing the consumption and safety needs of this new market base. One such initiative is a partnership between Bharti Airtel and the Indian Farmers Fertilizer Cooperative that uses a "Green SIM," allowing mobile customers to access daily voice messages in local languages on the weather, crops and livestock, market prices, and government agricultural

[e] Full set of barriers are discussed in Gill, K., Brooks, K., McDougall, J., Patel, P. and Kes, A. 2010. *Bridging the gender divide: How technology can advance women economically.* Washington, DC: ICRW.

schemes. While not targeted exclusively at women, this and similar ICT-based offerings can help women overcome challenges such as limited access to markets and market information. Similarly, the expanding mobile banking industry in India is beginning to offer products that benefit women by limiting the need to travel or handle large amounts of cash. For example, the State Bank of India provides services such as wireless cash transfers, bill payments, and basic account inquiries.

While the number and range of ICT-based products and services being designed with women in mind is growing, there is still a large untapped market for ICT companies to create products and services that cater to poor and rural women. In addition, although the ICT private sector has demonstrated increasing interest in developing products and applications for women, several impediments have prevented such efforts from fully taking off. As one expert noted, "the primary block in developing and releasing these [ICT] products [targeted to women] is the coordination and negotiation required between multiple stakeholders …The time and cost involved in bringing these multiple stakeholders to one table is significant."[87] Partnership development thus needs to be strengthened in this arena. External agencies or donors could play a key facilitating role.[88] Furthermore, some telecom companies may be reluctant to tailor products and services to women due to fear of the potential social backlash.[89] These challenges highlight the sense that with India's booming ICT industry, it is not an automatic step to look beyond the general ICT consumer to focus on women or women entrepreneurs.

2.7 THREE-WAY CONFLUENCE OF ICTS, WOMEN, AND ECONOMIC POLICY

As documented above, our research indicates that for the most part, ICTs, women's entrepreneurship, and India's macro-economy have been connecting through two-way interactions, creating some, but not tremendous momentum for women's businesses. The potential for a great leap forward, however, may lie not in a two-way, but a three-way, confluence across all three factors where the factors driving economic growth, social inclusion, market forces, and women's economic power all come together to propel women's business opportunities to a new level. A recent example of such a convergence is the Indian government's launch of the Sanchar Shakti scheme on International Women's Day, March 8, 2011. The scheme fosters livelihood skills for women's self-help groups in rural India through ICTs and mobile voice activated services. Sanchar Shakti represents a government policy deliberately aimed at economic growth and women's economic advancement, and it builds on two previously unconnected forces: the power of the ICT industry and the strength of women's self-help groups. It is one among an evolving number of initiatives that are beginning to see women's economic success, ICTs, and the country's progress as integrally connected.

III.

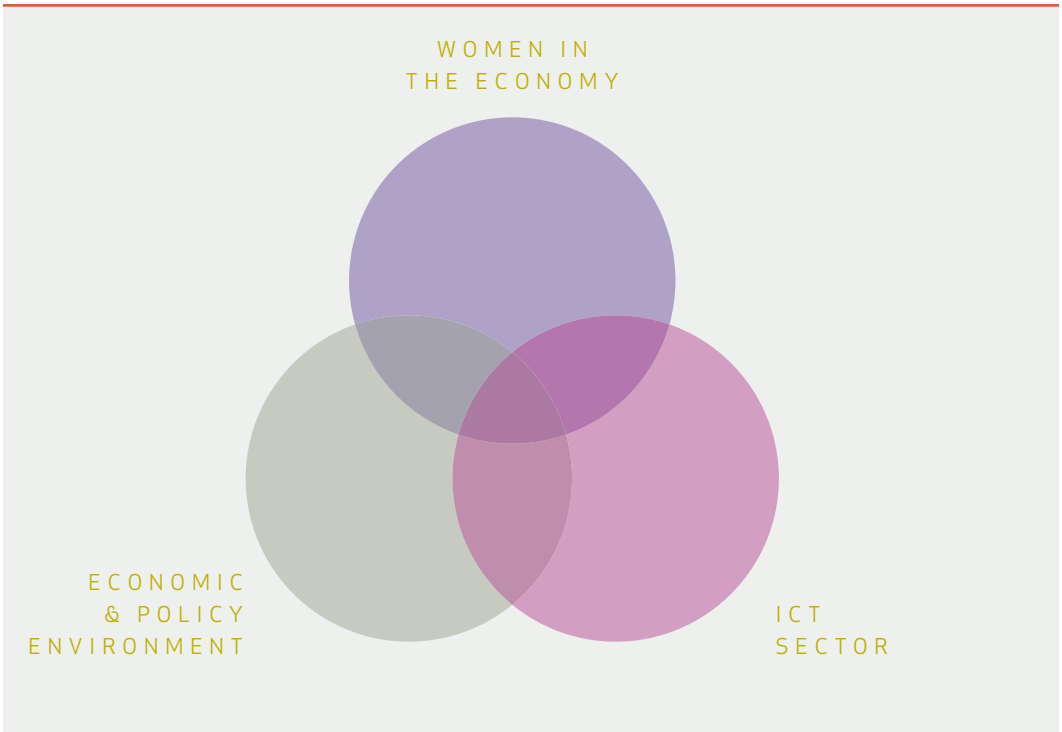
ICTs CATALYZING WOMEN'S ENTREPRENEURSHIP— FOUR CASE STUDIES

"There is no tool for development more effective than the empowerment of women ... and endeavors [that help] create intelligent gender-based perceptions about ICTs do play important roles to speed up developmental goals."[90]

— Kofi Annan, Secretary General of the United Nations, 1997-2006

As the wave of the future, the confluence of ideas, expertise and stakeholders across these three areas—macro-economic policy, the ICT industry, and women's roles in the economy—is catalyzing several initiatives that leverage ICTs to strengthen women's business engagement and achievement. In this section, we examine four of these initiatives in detail to understand better what factors are behind their evolution, and what lessons they offer interested stakeholders for fulfilling the triple promise of ICTs, the Indian economy, and women's entrepreneurship.

FIGURE 1: Confluence of Change Agents



Case Study Methodology

The primary motivation for undertaking a case study approach is to explore and learn from current initiatives that have built ICT platforms into their programs, products, or services to accelerate women's entrepreneurship and further economic growth and inclusion. In identifying and selecting promising case studies, the biggest limitation we faced was the fact that such ICT-based approaches for poor and low-income women are still at an early stage of development in India. Thus, only a handful of initiatives surfaced that could potentially be documented for broader insights. In particular, it was challenging to identify private sector-led initiatives since publicly accessible documentation on internal corporate practices is lacking. It is also possible that this is an area in which there is not much private sector activity. Our interviews with experts suggest that ICT companies are engaged in research and marketing studies to identify potential products, services, and customers, some of which focus on women. However, it is not clear whether such efforts revolve around the design, development, and innovation of ICT-related products targeting women only as consumers or as entrepreneurs as well.

Despite these limitations, we were able to identify and examine diverse case studies that met several key criteria for inclusion across our main areas of interest. The fundamental criterion for identifying a potential case study was that it must have women's entrepreneurship as a core focus, as well as an ICT component that is linked to women's business activities. In addition, we selected initiatives that provided some diversity and variation in:

- The range and forms of ICTs involved and their role in women's business efforts;
- The profile and number of women entrepreneurs involved, ensuring that rural women and poor women were well-represented;
- The key market, economic, social, and policy catalysts that connect ICTs with women entrepreneurs;
- The types of barriers facing women entrepreneurs that ICTs effectively addressed; and
- The nature, scope, and depth of impact that the initiative generated for women entrepreneurs and their businesses, families, and communities.

Based on these criteria, we identified four initiatives to document as case studies in this section:

1. **AISECT** Enables women to launch and operate IT centers or kiosks that sell diverse products and services to customers via computers, mobiles and the Internet
2. **Hand in Hand-Uninor partnership** Supports the creation of women-run IT centers (Citizens' Center Enterprises) that provide customers with access to ICT products and services
3. **Mann Deshi Mahila** Promotes women's enterprise activity through access to financial services and products (including to buy mobiles), as well as ICT literacy and business training
4. **Sasken VyapaarSEWA** Supports women's entrepreneurial activity by developing mobile-based applications that help women expand market reach and improve business management

As Table 2 shows, the four initiatives leverage different types of information and communications technologies, and to varying degrees, in order to support women entrepreneurs. The darker shades show greater mobilization of a particular type of ICT, while lighter shades represent a minimal role. It is noteworthy that all four initiatives use mobile phones to facilitate women's entrepreneurship while only two of the four use the Internet for this purpose. Most initiatives use multiple ICTs in their efforts. Sasken VyapaarSEWA is the only one that revolves solely—and intensely—on mobile phones.

TABLE 2: ICTs Applied by Case Study Initiatives

CASE STUDY INITIATIVE	TYPE OF ICT		
	MOBILE PHONES	COMPUTERS	INTERNET
AISECT			
Hand in Hand-Uninor			
Mann Deshi Mahila			
Sasken VyapaarSEWA			

MINIMAL ROLE MEDIUM ROLE STRONGER ROLE

The ICRW team undertook field research and collected primary data from the organizations and individuals involved in these initiatives. This consisted of face-to-face and phone interviews with program leaders, managers, and staff, as well as face-to-face interviews and focus group discussions with women entrepreneurs.[f] Data were then recorded and analyzed for consistency, patterns, and insights.

In our analysis, we concentrated on the following five elements in each case study:

1. How the initiative works, what ICTs it focuses on, what demographic of women entrepreneurs it benefits, and the products and services leveraged for women's businesses;
2. The nature of the specific confluence across macro policy factors, women's economic roles, and the ICT industry that is fostering enterprise development among women;
3. The distinguishing features of the initiative, including the investment and business approaches, and the actual or potential role for private sector engagement;
4. The barriers to women's entrepreneurship that each initiative helps to overcome; and
5. The impact on women entrepreneurs, their businesses, and beyond, and the potential for scale and sustainability.

In addition to these case studies, we also provide highlights on other nascent initiatives that have strong potential to strengthen women entrepreneurs. Together, these initiatives provide valuable lessons that can help shape the evolution of the ICTs and women's entrepreneurship nexus in India and other emerging economies.

[f] The names of women entrepreneurs have been changed to preserve their privacy. Women entrepreneurs consented to the inclusion of details about their businesses within the report.

CASE STUDY 1:
AISECT

> **"My mobile phone is my oxygen. It gets me business and keeps me alive through the 24-7 action of my professional and personal life."**
>
> — Monica, AISECT Entrepreneur

The All India Society for Electronics and Computer Technology (AISECT) creates opportunities for rural women to launch and operate IT centers or kiosks that sell educational, e-commerce, and e-governance products and services to rural customers via computers, mobile phones, and the Internet.

AISECT: Distinguishing Features

- Program has created economic opportunity for women and rural communities by offering ICT-based education and services since the late 1990s
- Strong brand recognition, financial incentives for women, training, and back-end support combine to offer first-time female entrepreneurs a low-risk entrepreneurial opportunity
- Women can establish these businesses within their homes, saving time in managing other household responsibilities
- By delivering educational services using ICTs, program provides women with an entry point for engaging in a socially acceptable and desirable entrepreneurial activity
- Mobile phones are a powerful "business-enabling tool" for AISECT's female entrepreneurs, particularly in marketing efforts by sending messages to their customer base
- Women-run educational centers create a supportive environment for female students to develop critical ICT and entrepreneurship skills, in turn encouraging more women to establish these centers

OVERVIEW

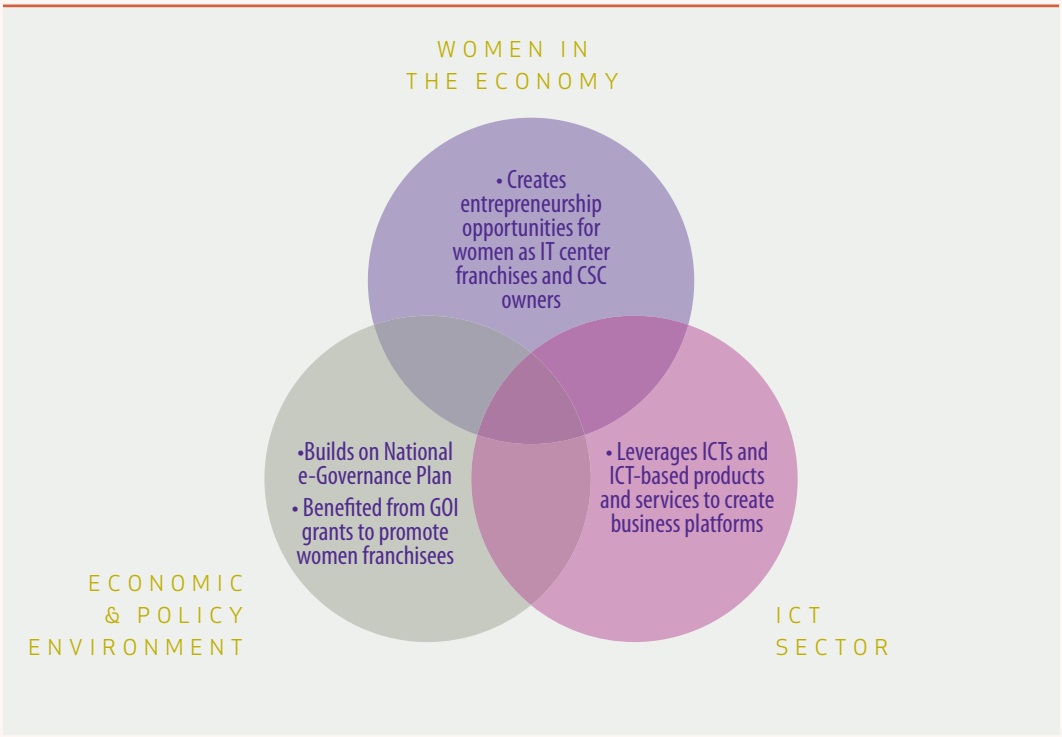
AISECT is an ICT-based educational business founded in 1985. Headquartered in Madhya Pradesh, it is comprised of two arms: AISECT Private Limited is a for-profit business, and AISECT Society is a non-profit that was created in the early 1990s to promote science and technology in rural India.

AISECT's core business model is made up of franchised "IT education centers" that operate in rural and semi-urban areas in all but one of India's 28 states. These franchised IT centers are launched by local entrepreneurs—women and men—who register for, and are granted operating licenses by AISECT to deliver computer-based education and training to local students. In total, about 1 million students, most of whom are youth from low-to-middle income backgrounds, have graduated from AISECT centers. A more recent segment of AISECT's business is a network of Common Service Centers (CSCs) launched in 2008. The CSCs are smaller village-level service kiosks run by micro-entrepreneurs. The centers offer rural citizens access to e-governance and e-business services, as well as AISECT's livelihood and vocational courses. AISECT currently supports approximately 4,000 CSC entrepreneurs and another 4,000 IT center entrepreneurs in its network.

ICTS FOR WOMEN'S ENTREPRENEURSHIP

AISECT has effectively leveraged several factors from each of the three domains of the Indian landscape to support women's entrepreneurship through ICTs (see Figure 2).

FIGURE 2: Confluence of Change Agents: AISECT



AISECT enables women to use ICTs to create businesses that offer computer-based educational courses, e-governance access, and mobile phone airtime recharges to customers. To help launch its focus on women entrepreneurs, AISECT has drawn on financial support from the Indian government's National e-governance Plan, as well as the government's recent emphasis on strengthening women's inclusion within emerging economic opportunities.

AISECT began promoting women as entrepreneurs to run its centers in the 1990s, in part because women were applying for franchise licenses. Over the past 10 years, women entrepreneurs have come to comprise a larger proportion of AISECT's mainstream business model. AISECT has created financial incentives to encourage women's entrepreneurship within its network, providing women franchisees with a 15 percent discount on start-up and renewal franchise fees, which usually range from 15,000-25,000 INR. Similarly, it offers women CSC entrepreneurs a 50 percent discount on the startup fee for establishing a kiosk. Currently, about 13 percent of entrepreneurs in AISECT's network are women: 400 IT center entrepreneurs and 658 women CSC entrepreneurs.

CASE STUDY 1:
AISECT

AISECT's women franchisees are typically from low- to middle-income backgrounds and are first-time entrepreneurs. Many of the women are motivated to start their own AISECT centers by the desire to contribute social value to their communities via ICTs, as well as by the need to earn income to support their families, as there are few economic opportunities for women. Female IT center franchisees, like their male counterparts, establish educational centers with five to 10 computers, Internet connectivity, a printer, and a scanner. Computers and the Internet are principally used to support the delivery of AISECT educational courses, which are available in 11 regional Indian languages. AISECT educational courses are taught by hired faculty members and cover a range of employment-related topics: computers, vocational skills, livelihood development, management, and entrepreneurship.

In addition to delivering computer-based AISECT courses to rural customers, AISECT encourages entrepreneurs to run multi-purpose ICT centers. Franchisees can select a range of fee-based products and services to offer customers, including the following:

- Sale of insurance policies
- Online sale of railway tickets
- E-governance services such as access to government forms and public sector job applications;
- Mobile phone airtime recharge services
- Sale of SIM cards
- Photocopying
- Use of word processing applications
- Printing services

One of the key roles AISECT plays in supporting entrepreneurs is to centrally negotiate rates for these types of retail arrangements. In this way, AISECT's partnerships with government agencies, telecom and insurance companies such as Airtel and Idea Cellular, and national banks such as the State Bank of India, have benefitted lower income women entrepreneurs. These women entrepreneurs are, in turn, able to generate revenues by selling a suite of ICT-based products and services to their customers.

AISECT also helps ensure quality standards across its network of IT centers. All students register for courses through AISECT's central portal. The AISECT network management team disseminates course materials to students, conducts exams, communicates with students about milestones in the courses, and issues course certificates. AISECT has established helplines and automated e-mail communication channels that provide troubleshooting assistance to IT center entrepreneurs. In addition, the AISECT management team uses SMS to send information and updates to its entrepreneur network. All AISECT centers maintain an online log of student enrollment and transactions at the centers, which enables AISECT to monitor transaction volumes. AISECT's agreements are renewed with individual IT center franchisees based on performance. Through these approaches, AISECT has demystified the "business of doing business" for first-time women entrepreneurs.

Many of AISECT's women entrepreneurs use mobile phones to manage their enterprises, although it is not an intentional element of AISECT. Much in the way that AISECT communicates with its franchise entrepreneurs, women entrepreneurs use bulk SMS messages to send promotional notifications to their customer base. Specifically, many of them use a platform called Way2SMS, India's first free web-to-mobile SMS service, to connect to hundreds of customers at a time via SMS. These customers often forward messages to others in their own social networks, helping women entrepreneurs substantially expand their market base.

BARRIERS ADDRESSED

AISECT has helped to overcome several barriers to women's entrepreneurship, particularly through the use of various ICT platforms and services. Most prominent are its efforts to reduce women's time burden and to support them in creating market linkages for their enterprises. Table 3 summarizes the barriers that AISECT has helped address:

TABLE 3: How AISECT Addresses Barriers to Women's Entrepreneurship

BARRIERS	AISECT APPROACHES
Time	• Women entrepreneurs save time by running centers from their homes • Flexible hours offered by IT centers cater to schedules of women students
Skills and Training	• Computer-based educational curriculum builds women's business and entrepreneurial skills
Markets	• AISECT negotiates a range of retail partnerships that entrepreneurs can offer as tie-in products and services to customers • Mobile phones serve as "business-enabling" tools that entrepreneurs use to maintain and expand customer base
Business Networks	• Helplines and email communication channels provide entrepreneurs with troubleshooting support
Social Norms	• Women entrepreneurs benefit from substantial support from their families to engage in entrepreneurship • Broad social acceptance supports women's participation as owners of ICT-based education centers

IMPACT AND SUSTAINABILITY

The AISECT model has had a positive impact on women entrepreneurs in its network in several areas. Women AISECT entrepreneurs have been able to successfully manage, and in some cases, grow their businesses. Most women franchisees have been in business about six to eight years. Within a given year, an average- to medium-performing IT center trains about 100 students.

CASE STUDY 1:
AISECT

With this volume, the vast majority of AISECT IT centers run by women break even in the second and third year of operation. The average operational costs of a successful IT center equal about half of the center's revenues. Women entrepreneurs earn monthly profits ranging from 8,000-20,000 INR. Approximately 5 percent of AISECT women entrepreneurs reinvest their profits to establish additional centers. Some women entrepreneurs also apply for bank credit to expand their centers, and the AISECT brand name and credibility help them secure financing through the formal banking sector.

The approach of education through ICT centers as an entry point for women's entrepreneurship has demonstrated itself to be not only socially acceptable, but also desirable for both women and their families. For one, AISECT's strong reputation in communities where it has established a presence over the years has helped reduce perceptions of risk among women and their families when deciding to engage in entrepreneurship. Many of AISECT's women franchisees have also received financial support from family members to cover the cost of establishing an IT center. Furthermore, the experience of managing IT educational centers has given women AISECT franchisees greater self-confidence, increased their value in the family, and earned them respect from the community at large.

AISECT's women entrepreneurs also play a crucial role in creating a supportive environment within their IT centers for other women and girls to build their ICT and entrepreneurial skills. Women and girls make up approximately 80 percent of the customer base of IT centers that are run by women. This is partly a result of the flexible course schedules that women entrepreneurs offer their customers. Women franchisees sometimes provide discounts of up to 15 percent on course fees for girls, which the entrepreneurs have converted into a market advantage in order to encourage girls' enrollment. AISECT'S educational approach thus serves to build the capacity of a larger number of female students who can then go on to participate in ICT-related employment or entrepreneurship. In fact, about 10 percent of women students who complete AISECT courses later establish their own AISECT IT centers. Furthermore, the vast majority of women franchise entrepreneurs have taken an AISECT center course.

The sustainability potential of AISECT's model is fairly strong, given its attention to ensuring the financial viability of its centers both for itself and for individual entrepreneurs. Its revenue streams channel a portion of earnings from the IT center franchises back into its business: entrepreneurs pay AISECT start-up and annual renewal license fees, and return 15 percent of their revenues to AISECT. CSC entrepreneurs also pay start-up fees to AISECT. Currently, 90 percent of AISECT's total revenues come from its education business, and only 5 percent come from government grants. AISECT has been financially successful over the years, with revenues increasing from 127 million to 400.5 million INR between 2007 and 2010. AISECT'S retail partnerships have also helped ensure the viability and sustainability of businesses at the individual entrepreneur level: the e-commerce and e-governance offerings generate on average 25 percent of revenue streams for franchise entrepreneurs, and 15 percent of revenue streams for CSC entrepreneurs.

Moving forward, AISECT seeks to expand its roster of IT center entrepreneurs to 15,000. It also aims to increase the number of women entrepreneurs who run IT centers, given the success that women entrepreneurs have already experienced in cultivating niche market segments within rural and semi-urban areas. However, the issue of future market saturation of AISECT's centers and CSCs for women might be a potential concern given the emergence of similar ICT centers and kiosks promoted by other businesses and organizations. Currently, AISECT seems to have a market advantage given its strong reputation and brand recognition in areas of India where it has a significant presence.

ENTREPRENEUR PROFILE: SARITA, IT CENTER ENTREPRENEUR

SARITA is a married teacher with a Bachelor's degree in science who taught computers to children. In 1993, she began to teach AISECT's computer-based curriculum in schools then run by AISECT. It was at this time that she felt the need to improve her computer skills. She and her husband decided to purchase a computer with money they had saved to buy a car. "A computer promised returns of learning and earning," Sarita explains. Soon afterward, Sarita began the first AISECT center in her district. She also enrolled for a diploma course at her own center.

As the first female franchisee, Sarita is a pioneer member of AISECT's entrepreneur network. Her center currently has 80 computers, and more than 1,000 students have trained there. Sarita also holds a post graduate diploma in management from AISECT.

"Ten years ago, they called me 'computer aunty,'" Sarita says. "Now I have been knighted as 'computer daadi' (computer granny)."

Over the past years, Sarita has successfully remained ahead of the competition, even from male-run AISECT centers. She still has an eye toward business growth and technology-driven strategies. "Technology will always change ... get more sophisticated," she says. "Now with all our business converging onto the mobile, and with the mobile making life so simple, I can think of growth without getting stressed. My markets, my vendors, the AISECT team ... they are all just an SMS away."

CASE STUDY 2:
HAND IN HAND-UNINOR PARTNERSHIP

> **"Women are not treated equally and therefore must get strong economically. This is why I decided I must do business."**
>
> — Padmini, Citizen's Center Enterprise (CCE) entrepreneur

Hand in Hand supports the development of Citizens' Center Enterprises (CCE), which are women's enterprises (IT centers) that provide access to ICT products and services in rural and semi-urban communities. This case study focuses on CCEs that are supported through a partnership with Uninor, a mobile phone services provider.

Hand in Hand-Uninor: Distinguishing Features

- Program creates opportunities for women from lower income families to launch, operate, and manage ICT-based businesses that sell products and services to customers through computers, the Internet, and mobile phones
- Holistic support for new entrepreneurs, even those without IT or business experience, provides training, financial loans, a negotiated menu of products/services, and ongoing technical support
- Product tie-in with Uninor creates an interesting partnership model, combining business interests (more retail outlets for Uninor products, increased income for women entrepreneurs) with social outcomes (improved public access to ICT products and services)
- Flexible business operations allow women to optimize their time, establish their working hours, and manage household responsibilities
- Women entrepreneurs promote ICT awareness and skill-acquisition among rural community members, primarily other women

OVERVIEW

Hand in Hand (HiH), launched in 2002 as a small operation in Tamil Nadu, is a public charitable trust that operates in four states (Tamil Nadu, Pondicherry, Karnataka, and Madhya Pradesh) and globally to eliminate poverty by creating jobs. HiH's program builds on India's experience with self-help groups. HiH encourages and supports village women to form self-help groups that provide a forum for gaining vocational and entrepreneurial skills, building businesses, and facilitating financial linkages to banks and microfinance institutions for savings and loan services. In Tamil Nadu, HiH has mobilized almost 500,000 women into self-help groups and strengthened over 334,000 women-led enterprises.

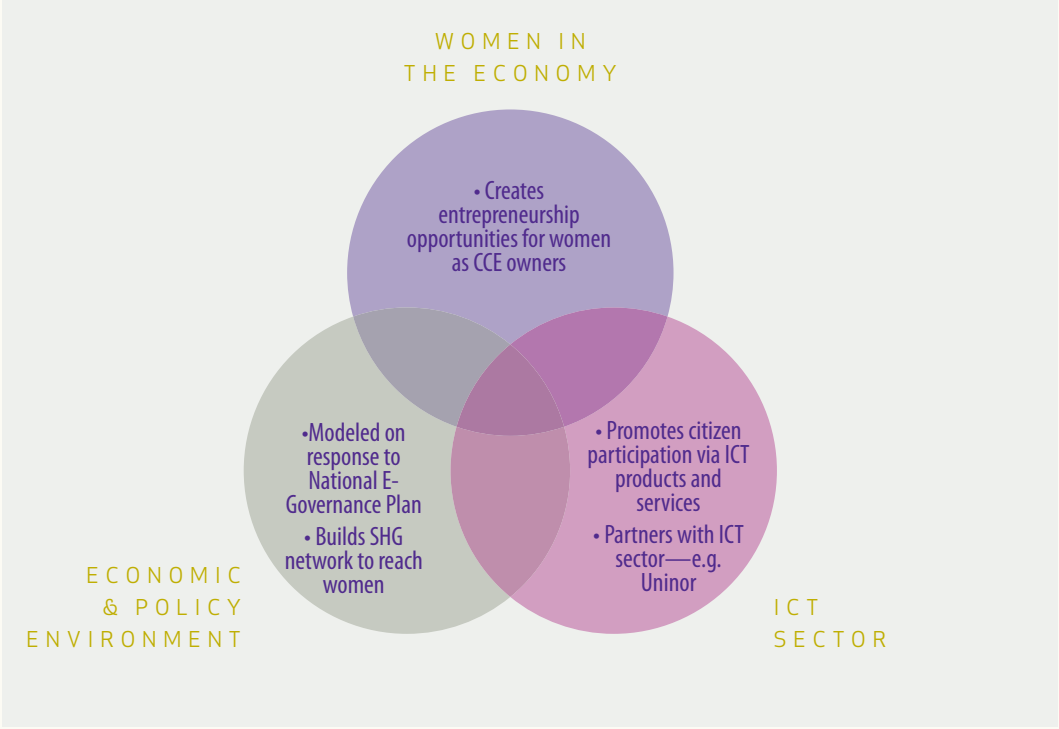
In 2007, HiH introduced an ICT component to its endeavors by creating Citizens' Center Enterprises (CCE), which provide computer and information services in rural areas. In two years, HiH had turned this into an entrepreneurial model, seeing CCEs as an opportunity to create livelihoods for rural and semi-urban women while capitalizing on local knowledge of community needs and interests to better

tailor CCE offerings to the local consumer base. CCEs run by local women provided a more sustainable approach for ensuring that ICT services would be continuously available for communities. As part of the effort to make this a more entrepreneurial venture, HiH pursued partnerships—such as the one with Uninor—that would provide revenue-generating products and services for the CCEs. By March 2011, HiH supported 2,523 CCEs, including 50 launched in 2010 under the initial Uninor partnership. HiH and Uninor are currently expanding a modified program to another 500 CCEs in South India.

ICTS FOR WOMEN'S ENTREPRENEURSHIP

In designing its women-run CCE program, HiH capitalizes on several contextual factors within the larger Indian environment (see Figure 3).

FIGURE 3: Confluence of Change Agents: Hand in Hand



HiH's model builds on two important macro-level trends: the strong self-help group movement in India and the e-governance imperative. HiH brings these two ideas together by developing women-run CCEs—first by forming self-help groups to tap members interested in running their own business and strengthening their entrepreneurial skills, and then by creating business opportunities that support the government's commitment to providing ICT-based products and services for rural communities.

HiH's program also takes advantage of India's growing ICT sector as both a means and an end in achieving its goals: HiH cultivates ICT partnerships, products, and services to create new business opportunities for women while using these same tools to create access to information and services

for broader rural communities. This approach has pushed the organization to pursue partnerships with a range of ICT sector players, with Uninor being one example. Finally, HiH's underlying objective is to create new economic opportunities for women in rural communities. The CCEs provide a critical vehicle for supporting women's entrepreneurship in communities where economic options are often limited.

ICTs form the basis of the business opportunity created through HiH's program for women members of their self-help groups, who are generally lower income, married women living in rural communities. For most, the CCE is their first work experience, not just their first business, and many women are not familiar with the technologies involved. As such, HiH has developed a support package that guides women through every step of establishing a CCE.

Interested women from HiH-supported self-help groups complete an application process. HiH notes that many who apply are leaders of their self-help groups and are, therefore, women who have experience managing and interacting with others in a public forum. HiH accepts all applicants who meet the educational criteria of 10 years of schooling with some background in English, and have some awareness of, but not necessarily any direct experience with, ICTs and computer-related business. HiH provides a training program that addresses skill-building at three levels: ICT skills, business skills, and income-generating skills. The full course takes 13 days and caters to women who may not have an IT background.

Each CCE offers a locally-relevant combination of products and services. The entrepreneur chooses from among the following:

- Courses in computer literacy and other computer courses
- Desktop publishing
- Formatting and printing of documents/banners/etc., including school/college projects
- Fax and pay telephone services
- Internet communications (e-mail, instant chatting/messaging, web browsing)
- Online services (e.g., matrimonial services, college admissions)
- Mobile airtime recharging and SIM cards

Women CCE entrepreneurs receive a pre-set loan from HiH's affiliated microfinance institution, Belstar Investment and Finance Private Ltd. This ensures that all aspiring entrepreneurs have access to the funds they need to start their CCE, regardless of their qualifications and experience. No additional start-up capital is required, nor do women need to meet any additional criteria typically required to secure a bank loan. With the loan, entrepreneurs equip their CCE with one computer and basic furniture. Those in the Uninor program also receive an Internet connection, which is free for one year. Entrepreneurs and their families can expand the CCE by investing their own money, or after the initial loan has been paid back. With the financial and program support that HiH provides, CCEs generally take six months to stabilize, including time for the woman entrepreneur to solidify products and services, establish a customer base, and build local credibility and awareness. After this point, CCEs are usually "viable" and begin to generate revenue.

HiH has formed partnerships with for-profit companies to create tie-ins that generate revenue for the CCEs. These companies include State Bank of India, which opens savings accounts and conducts transactions; Sahaj for e-governance services; and Tamil Nadu Advanced Technical Training Institute for certification on computer classes. HiH has also cultivated a relationship with Uninor,

Hand in Hand-Uninor Partnership

- Free Internet access for one year (a value of 10,000 INR per CCE)
- Training on Uninor products and retail processes
- Mobile handsets for activation and recharge services (exclusively for Uninor-brand SIM cards)
- Special branding and promotional links, such as name boards and co-branding between Uninor and HiH (CCEs cannot be home-based)
- ICT awareness outreach to other community members, especially women

which initially grew out of the need to create Internet access for CCE entrepreneurs who otherwise faced financial and bureaucratic difficulties in establishing connections. HiH centrally manages retail negotiations with diverse businesses and then distributes these services to the CCEs (not all products are available to all CCEs), who in turn are able to offer some of them to customers. HiH staff provide continuous follow-up and mentoring to support women entrepreneurs as they start the CCEs, repay loans, problem-solve, and adjust to being an entrepreneur. As part of their participation in Uninor-supported CCEs, women entrepreneurs are expected to reach out to community members to increase awareness about computers and encourage computer and ICT options for jobs and enterprises.

BARRIERS ADDRESSED

HiH has developed a program that addresses multiple barriers for women interested in running their own business by tapping the power of ICTs to create both the opportunity and the tools to make the business happen. These are presented in Table 4.

IMPACT AND SUSTAINABILITY

Hand in Hand's approach to cultivating women entrepreneurs from its network of self-help groups has resulted in several gains for the women involved. Many women entrepreneurs stressed the important social gains they have made as a result of being part of the CCE initiative, including improved self-confidence, skills, and business acumen. Securing the support of family members has been critical to ensuring that women entrepreneurs have been able to own and manage CCEs. The general social acceptance of women's engagement in the ICT sector within some of the geographic areas where the program operates has helped facilitate this type of entrepreneurship for women. In addition, several women cited that their status within the family has improved as a result of their more prominent role as income-earners. Finally, CCE women entrepreneurs note their increased stature within the community: they are recognized as businesswomen and valued for providing important ICT services.

CASE STUDY 2:
HAND IN HAND-UNINOR PARTNERSHIP

Communities also appreciate the role that CCE entrepreneurs play in establishing Good Governance Rights Protection Committees that mobilize villagers to learn about their rights and the government benefits for which they are eligible. Interestingly, the women CCE entrepreneurs are reaching out to other women with e-literacy training, job-oriented training, and broader awareness training on the Right to Information Act.

In terms of financial impact, women entrepreneurs have seen gains due to the connection with Uninor. Monthly income has increased from 700-1500 INR to 3000-3500 INR. This increase is due to sale of Uninor products, as well as Internet-based services through the free Internet supported by Uninor.

TABLE 4: How Hand in Hand Addresses Barriers to Women's Entrepreneurship

BARRIERS	HAND IN HAND APPROACHES
Time	• Flexibility of nearby or home-based CCEs (non-Uninor program) saves travel time • Control over hours of operation enables women to meet both domestic and professional responsibilities
Skills and Training	• Holistic training program builds women's basic skills in ICT, business management, and income-generating activities offered through the CCEs • Training materials structured to fit low literacy levels or English skills • In-person, dedicated training facilitates skill- and confidence-building
Finance and Capital	• Initial loan (from HiH) of 26,115 INR covers costs of a computer, printer, UPS, speaker, table/chair, and first-year maintenance charges • Manageable loan repayment plan (24 monthly installments) is woman-friendly
Markets	• Linkages created to an array of products and services • Mobile phones and Internet expand access to markets and market information
Social Norms	• Wide acceptance of IT and ICT as respectable businesses for women support women's entry into CCE ventures • Level of action and decision-making by being an entrepreneur creates sense of freedom • Positive social messaging and role-modeling about women entrepreneurs via community radio programs increases social capital

At the organizational level, HiH is a non-profit that relies on external financial support while Uninor's effort springs from its corporate social responsibility unit. For Uninor, the financial sustainability of the partnership or HiH as an organization is not the priority. Rather, the primary interest is in demonstrating proof of concept, including the viability of accessing new types of entrepreneurs. At the individual level, both HiH and women entrepreneurs work toward building a sustainable CCE. HiH has adopted a strategy to expand partnerships that will provide product and service ties-ins for CCEs to generate revenue. To the extent that these linkages can be maintained, the CCEs may continue to be viable. Alternatively, women running non-Uninor CCEs may add products and services that support their business interest beyond those provided by HiH. However, it is not yet clear to what extent either of these trajectories will play out in the future.

ENTREPRENEUR PROFILE: PADMINI, CITIZEN'S CENTER ENTERPRISE (CCE) ENTREPRENEUR

IN REFLECTING on her development as a CCE entrepreneur, Padmini highlights her determination to carve out her own path: "Women are not treated equally and therefore must get strong economically. This is why I decided I must do business."

Padmini's success as a CCE entrepreneur is a reflection of her own initiative, as well as the support she has received through HiH. To better prepare herself, she took a teacher's training course and began learning about computers. It was the HiH program that helped turn Padmini's dream into a reality. She notes that HiH's overall package of support is very useful, particularly the link to financing as "it is simply not possible to get a loan from outside. Even the design of the [HiH program] loan is friendly, as the monthly repayment is possible and therefore helps."

To source her first set of customers in 2007, she remembers putting up a notice, distributing pamphlets, and approaching people in the community. In the villages, she had also rented an auto-rickshaw to announce the launch of the CCE. Once she started her promotion, people began coming to her CCE. Unable to generate the level of revenue she wanted, Padmini shifted the location of her CCE from her village to a semi-urban area. Since the move, Padmini has seen a six-fold increase in her monthly profits and has taken on an employee. Her main sources of revenue include computer courses (certified courses that are three, six, and 12 months in duration, mostly for college and secondary-school students), Uninor products, and typing and Internet-browsing services. She continuously explores new product and service options using the Internet, and links with business associates using her mobile phone. She has expanded her business base with additional loans from HiH.

Padmini recognizes the journey she has made over the past four years to evolve into a "street-smart" entrepreneur. As a result of her success, she has seen changes in how she is viewed by her family and by the community: "My family feels I can support [them] now—earlier they used to support me. They can see I am able to stand on my own feet."

CASE STUDY 3:
MANN DESHI MAHILA

> **"[My mobile phone] saves me time and allows me to be on the move. I can do various transactions on the mobile, while overseeing operations or domestic responsibilities. I can stay in touch with various people ... and could convert the recognition into bigger and better business opportunities."**
>
> — Varsha, Mann Deshi Entrepreneur

Mann Deshi Mahila promotes women's entrepreneurial activity by creating access to financial services and products for women in their homes, building women's ICT literacy and business acumen through a Business School for Rural Women, and enabling women to purchase mobile phones.

Mann Deshi Mahila: Distinguishing Features

- Cooperative bank provides women clients tailored financing for ICT-related products
- Educational training programs build the financial, business, management, and ICT skills of low-income women members and entrepreneurs
- Women use mobiles to gain access to markets, market information, and mentorship services
- Initiative seeks to design and test new mobile-based applications to address specific needs of women entrepreneurs

OVERVIEW

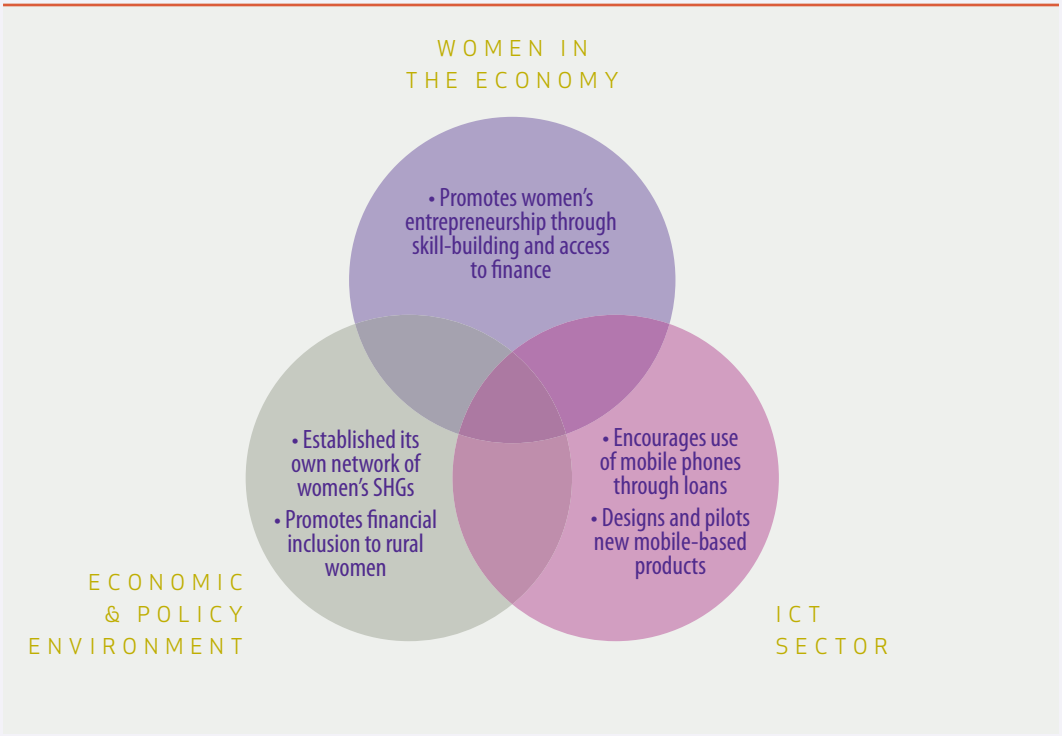
Mann Deshi is composed of three organizations based in Maharashtra: 1) Mann Deshi Mahila Sahakari Bank (Mann Deshi Bank), a rural cooperative bank run by and exclusively for women clients; 2) Mann Deshi Foundation, a registered non-governmental organization; and 3) Mann Deshi Mahila Bachat Gat Federation (Mann Deshi Federation), which supports a network of more than 2,400 self-help groups. Chetna Gala Sinha, a female entrepreneur, created the Mann Deshi Foundation in 1994 and later established the Mann Deshi Bank in 1997. These three organizations aim to empower moderately low-income rural women by supporting their microenterprise activity and asset-building through access to financial products and services, capacity building in business and management, and the adoption of new technology.

Since 2006, the Mann Deshi Foundation has run a Business School for Rural Women; HSBC Bank was a founding partner. The school offers training in business, financial literacy, marketing, and management to existing and would-be women entrepreneurs. It was established to respond to the critical need to strengthen women loan borrowers' financial literacy, which Mann Deshi Bank staff had identified. In early 2010, the foundation also launched the Deshi Entrepreneur program, which aims to support 1,000 rural businesswomen with business management training and mentorship to help them achieve enterprise growth.

ICTS FOR WOMEN'S ENTREPRENEURSHIP

Mann Deshi has built on several factors within the three foundational areas of the Indian context to strengthen women's entrepreneurial activity (see Figure 4).

FIGURE 4: Confluence of Change Agents: Mann Deshi Mahila



For one, Mann Deshi has created its own large self-help group network, providing members with critical finance and ICT-related products and services. In doing so, Mann Deshi successfully leverages the Indian government's mandate on financial inclusion, as well as new innovations in the ICT sector to support women entrepreneurs.

Mann Deshi Bank has employed ICTs in a number of ways to accelerate entrepreneurship among women clients. The Business School for Rural Women provides classroom courses in two states (Maharashtra and Karnataka), as well as training to interested women through "business schools on wheels" that are operated in buses traveling to villages in Maharashtra and Karnataka. Within these mobile classrooms, courses are offered in financial and marketing topics as well as computer and mobile phone literacy.

The Mann Deshi Bank realized that although many of their clients who owned businesses did not have mobile phones, they had a keen interest in purchasing them to help run their enterprises. The bank offered clients loans starting at 5,000 INR to purchase mobile phones. Thus far, 300 women clients have taken advantage of this loan facility. Many of the women are using mobile phones to determine local market prices for raw material inputs, place orders for inputs, and cultivate their customer base.

CASE STUDY 3:
MANN DESHI MAHILA

Based on the experience of its clients and women entrepreneurs, Mann Deshi leadership believes that mobile phones are suited to the needs of rural women and are well within their reach. Staff note that mobile phones require less power than computers to operate and are also easy to use. Women with lower literacy levels—often the profile of women supported by Mann Deshi—can easily learn and feel comfortable using voice data transmission via mobile phones. One interesting mobile phone application that Mann Deshi has identified and promoted among its women entrepreneurs is a water pump with a remote mobile starter—a technology developed by an Indian company (see Entrepreneur Profile box).

ENTREPRENEUR PROFILE: SUNITA, MANN DESHI ENTREPRENEUR

SUNITA is a married entrepreneur in her 30s. With the support of her husband, she began a silkworm breeding business several years ago out of a desire to supplement her family's income. Her microenterprise consists of selling the cocoons of silkworms she breeds to traders or government agencies.

The mobile phone Sunita bought a few years ago supports her ability to effectively manage her enterprise. She uses it to call traders to find out market prices of silkworm cocoons and to notify them when her next batch of cocoons will be ready. She also uses it to communicate with her children when she is out of the house.

In 2010, Sunita was approached by a company that sells a mobile-operated water pump kit, dubbed by the Indian male entrepreneur who developed the technology as the "Nano Ganesh." She took out a loan from Mann Deshi Bank to purchase the pump for her silkworm production shed. By making a call to a specified number from her mobile phone, Sunita can remotely turn on the pump to send well water to her silkworm shed. "I can remotely activate the pump and do not need to walk the 3-4 km every time to switch it on and off."

In March 2001, Mann Deshi Bank piloted a new ICT-based innovation—the sale of e-cards to its women clients. An e-card is a plastic microchip that enables women to more securely store their financial and bank account history. The use of the e-card builds upon the bank's existing doorstep services, in which bank field agents regularly visit women's homes to collect loan repayment. A woman client who owns a personal e-card is able to access information stored on the card by inserting it into a handheld portable device that a field agent carries. This combination of ICT products now enables women to more easily access most of the bank's services. For example, women are able to view and receive printed mini-financial statements and submit account-related documents. The e-card thus reduces the need for women to travel to local bank branches, which could take up to half a day. Mann Deshi Bank seeks to expand the sale of e-cards to a large majority of its clients throughout 2011.

The Deshi Entrepreneur program also integrates the connective power of mobile phones to link women entrepreneurs with mentorship services. It provides women with airtime vouchers at no cost to allow them to communicate via mobile phones with mentors with whom they are matched. These mentors are successful women entrepreneurs from local communities who provide women entrepreneurs with targeted business advice and support.

Mann Deshi also continues to examine new mobile phone applications and innovations that could be relevant for meeting the needs of its women clients. The organization is currently exploring the use of image-based services via mobiles that would enable women to receive timely information and advice. For example, women could solicit suggestions from agricultural experts on how to care for diseased plants by sending photos of the plants and corresponding with the resource persons via SMS. Mann Deshi is also working to develop a mobile-based application that would deliver vocational training to women entrepreneurs via SMS and voicemail on topics such as finance, agriculture, and livestock-rearing.

BARRIERS ADDRESSED

Mann Deshi aims to address barriers to women's entrepreneurship by promoting access to finance, skill building, and mentorship. These are summarized in Table 5:

TABLE 5: How Mann Deshi Addresses Barriers to Women's Entrepreneurship

BARRIERS	MANN DESHI APPROACHES
Time	• E-cards and doorstep field agents limit the need to travel to banks • Women save time by using mobile phones to speak to clients and input-providers
Skills and Training	• Training programs on business management, finance, and ICT literacy build women's entrepreneurial capacity
Capital and Financing	• Woman-friendly banking products and services support women's entrepreneurial endeavors • Loans enable the purchase of mobile phones
Markets	• Women use mobile phones to obtain market information and expand their markets
Business Networks	• Women entrepreneurs have mentors with whom they often communicate via mobile phones
Social Norms	• Positive social messaging about women entrepreneurs through community radio builds social capital • Program's achievements demonstrate the success of a bank designed to meet the financial needs of women

IMPACT AND SUSTAINABILITY

Mann Deshi's program is holistic in the way it leverages ICTs to support women entrepreneurs, resulting in a range of positive outcomes for women. About 60 percent of the more than 34,680 women who have completed the Business School for Rural Women have gone on to start their own businesses. Women have harnessed mobiles to manage—and in some cases, expand—their client

base, grow their businesses, and earn higher revenues. The ability to use mobile phones has reduced women's need to travel, thus saving them considerable time in managing their businesses and reconciling their work, personal, and family commitments. As they oversee growing enterprises, many Mann Deshi clients experience increased self-confidence and a greater sense of empowerment.

ENTREPRENEUR PROFILE: VARSHA, MANN DESHI ENTREPRENEUR

VARSHA is the most celebrated Mann Deshi entrepreneur and has been a role model for her entire community because of how she has established and managed her businesses. She joined a Mann Deshi self-help group in 2003 and received her first loan from Mann Deshi Bank in 2004 to purchase a machine to start a paper plate enterprise. She began making paper plates a year later and eventually upgraded to using more sophisticated machinery. She currently owns 11 machines.

Varsha's business requires her to speak with her customers, who are geographically dispersed, to market and sell her products. After hearing about mobile phones from the Mann Deshi Bank and her peers a few years ago, she got a loan from the bank to purchase a mobile. She learned how to use it within a matter of days and has since used it to support her business by connecting to her customers, accepting orders, and accessing and purchasing raw materials. Since she started using a mobile phone, Varsha says she receives larger orders from customers. She also uses a mobile phone to keep track of her payments. Others call her on her mobile to learn how she established her enterprise and to ask her for advice. She believes a mobile is a necessity today—an important tool to keep in touch with family and run a business.

The distinct elements of Mann Deshi's approach have varying degrees of cost recovery, and hence fall at different points across a spectrum in terms of sustainability potential. Overall, Mann Deshi is a social enterprise and a hybrid model in which two non-profit associations are linked with a for-profit bank. The non-profit bodies help build the capacity of the bank's clients—women entrepreneurs. As such, they are critical in making the financial institution more sustainable. The bank's core business provides loans to women for buying mobile phones, and generates revenues that are channeled back into its investment portfolio. Mann Deshi Bank has also benefited from credit that its partner, HSBC Bank, has directed to it in an effort to meet the Reserve Bank of India's standards for banks to actively target rural areas. In turn, Mann Deshi's partnership with HSBC Bank has enabled it to expand its reach among a larger number of women clients.

Mann Deshi Foundation's capacity-building programs—including the business school and mobile phone vouchers for the mentorship component—all depend on grants. In fact, women students pay only nominal fees to attend the business schools. These educational programs have in large part been supported by the philanthropic support from HSBC's corporate social responsibility portfolio. Given the fact that many of Mann Deshi's women members are unable to pay the full cost of their business education and ongoing mentoring, the challenge lies in sustaining these program activities that break down barriers to women's entrepreneurship.

CASE STUDY 4:
SASKEN VYAPAARSEWA

> **"A good idea is good business—both for Sasken and for women's self-help groups."**
>
> — S. R. Raja
> Associate Vice President, Strategy, Sasken

Sasken VyapaarSEWA supports women's entrepreneurial activity by developing mobile phone-based applications that help expand market reach and improve business management. Sasken VyapaarSEWA is focused on strengthening businesses and networks for women's self-help groups.

Sasken VyapaarSEWA™: Distinguishing Features

- Program creates opportunity for women in self-help groups to use mobile technology to access new markets for their products, refine their product/brand image, network with other self-help groups/women, and better manage their overall enterprise
- Partnership model brings together public, private, NGO, and self-help group actors to benefit women collectively, as well as individual self-help group members. This seems to be a good example of how different expertise, skills, and resources can be co-invested for mutual benefit (although viability of short/long-term impact for women and for Sasken is still to be demonstrated).
- Sasken engages women in a process of mobile product development, testing, and piloting
- Services are created for the self-help group platform, but have potential application for wider use by women entrepreneurs (and as commercially viable products for the general Indian market)

Note: Sasken VyapaarSEWA is a registered trademark in India.

OVERVIEW

Established in 1989, Sasken Communications Technology, Ltd. is a global communications solutions company with multiple offices in India, including the Bangalore-based team that is driving the Sasken VyapaarSEWA initiative. With the proliferation of mobile services in India, Sasken decided to leverage its knowledge base and technical expertise to explore potential business opportunities in the Indian market.

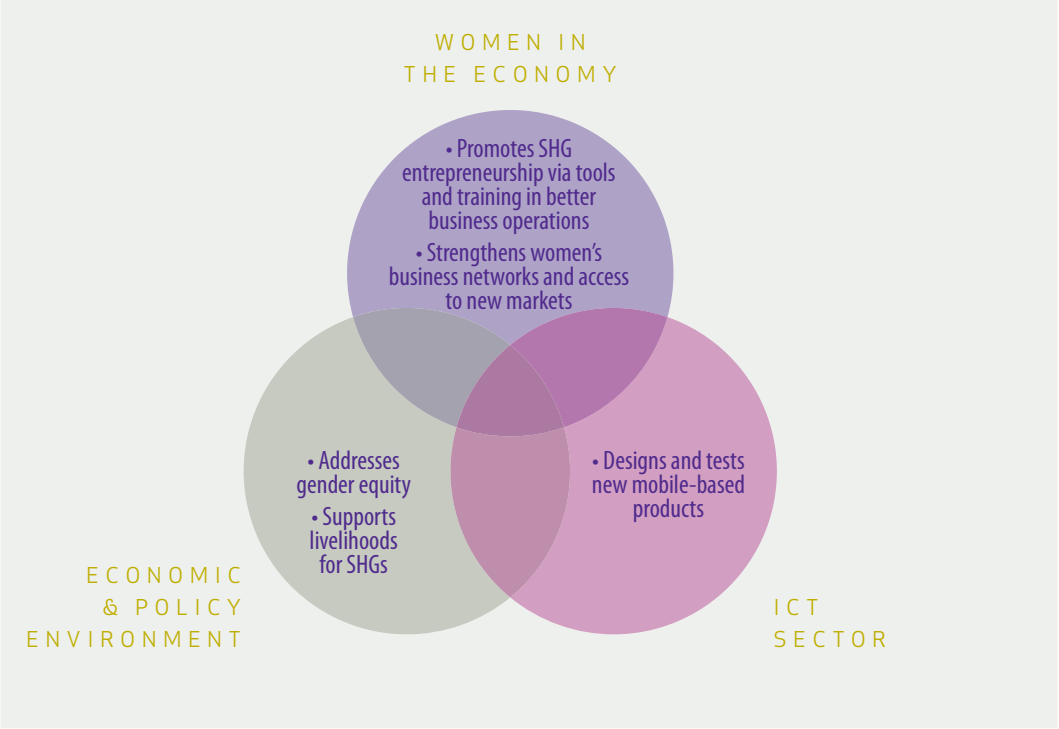
This case study focuses on Sasken's new VyapaarSEWA pilot project, which marks the culmination of a three-year process of working with women's self-help groups to develop mobile applications that improve their collective enterprise and individual livelihoods. Sasken's vision is a mobile technology-based platform that supports self-help groups in conducting business activities such as managing logistics for ordering, labeling, tracking, handling payments, and shipping products to intermediaries and customers outside their geographic area. All of this is done through the convenience, ease, and flexibility of their mobile phones. To achieve this, Sasken invested

in research efforts to design and test mobile applications that allow self-help groups and their members to use mobile phone image and voice activated systems in various local languages to access other self-help groups, web portals, and marketing agencies to sell their products more efficiently and expand their businesses. VyapaarSEWA evolved from this research effort.

ICTS FOR WOMEN'S ENTREPRENEURSHIP

Sasken emphasizes inclusive growth, with a focus on gender equity and women's access to technology to enhance their livelihoods and businesses. The evolution of Sasken's program reflects several contextual factors within the Indian landscape (see Figure 5).

FIGURE 5: Confluence of Change Agents: Sasken VyapaarSEWA



Sasken considered the macro-level themes of inclusive growth and development as part of its overall business strategy aimed at "mass appeal." Picking up on the government's focus on gender equity, Sasken began to explore women as customers for its products. Sasken's interest was fueled, in part, by research that shows women to be a critical economic catalyst for the overall household. As Sasken continued to develop its current project, the emphasis on women's groups emerged because they seemed to have a greater chance for sustainable entrepreneurial growth, as opposed to individual-owned businesses. Given the vast network of self-help groups across the country, and the fact that most self-help groups are engaged in some kind of enterprise, the self-help

group platform was a natural choice. As an ICT company, Sasken was well-positioned to capitalize on emerging technologies and opportunities within India's telecom sector. In particular, Sasken identified a key gap in the market—few mobile applications were being developed for group-based enterprises. This effectively gave Sasken a market niche with an underserved customer base. The linkages between ICTs, women's self-help groups, and entrepreneurships solidified throughout the design and testing phase of VyapaarSEWA. With support through the Sanchar Shakti scheme of the Department of Telecommunications,[h] Sasken has been able to move beyond its own investment into a proof of concept stage, with the plan of broadening its scale and services soon after.

The core ICT aspect in Sasken's efforts is a mobile technology-based platform that self-help groups can use to manage their collective enterprises. In its current form, the VyapaarSEWA mobile application is an interactive voice response system enterprise solution for women's self-help groups. Through this application, self-help group members can expand business reach by networking with other self-help groups and creating market linkages outside their geographic limits. In addition, they use a single mobile phone-based platform to centralize and coordinate management of business operations.

For this case study, the process by which Sasken arrived at the final product is as important as the product itself, providing an important example of how new technologies can be developed and tested with businesswomen to create products that meet their needs, interests, and capacities. Sasken invested in research with its target customer—women's self-help groups—to pinpoint the specific challenges they faced in producing, marketing, and building their businesses. Four concerns emerged that seemed particularly suited for ICT-based solutions:

- Self-help groups cannot access markets for their products beyond their immediate neighborhood. Given social norms and the time challenge of managing home and work, self-help groups are unable to seek out and supply new geographic areas and markets, thereby limiting business growth potential.
- As a result of their limited market reach, self-help groups are confined to small, often rural markets and are dealing with just one or two buyers who control the price, thus limiting their profit margins. Self-help groups are also vulnerable to middlemen who can skim a substantial portion of the profit from the sale of their products.
- The lack of clear branding and product differentiation reduces the ability of self-help groups to demand a higher value on their products, especially from more sophisticated and well-off customers who value the concept of uniqueness and are willing to pay a premium price for it.
- Women in rural and semi-urban areas often work on agricultural land or have unique artisanal skills. In the latter case, they are isolated from the markets that appreciate and absorb products that use craftsmanship. Market intelligence can link the right demand to the right supply to the benefit of both, creating supply chains and feedback mechanisms that can help grow both sides of the transaction.

[h] Sanchar Shakti is a scheme of the Department of Telecommunications - Universal Service Obligation Fund, within the Ministry of Communications and IT of the Government of India, aimed at tapping the power of women's self-help group networks to increase rural/semi-urban women's access to entrepreneurial and employment options. It also provides a mechanism that directly links women's entrepreneurship options to the growing ICT industry.

CASE STUDY 4:
SASKEN VYAPAARSEWA

With the four priority areas identified, Sasken collaborated with the Indian Institute of Management (IIM), Ahmedabad, on research to cultivate ICTs as a means of tackling livelihood issues among self-help group members. The research pilot was conducted in 2009–2010 with up to 300 honey-producing self-help groups in districts of Tamil Nadu.

Connecting Honey Producers via the Mobile Phone – How does it work?

The mobile phone application, VyapaarSEWA, connects women's self-help groups along a product value chain. During initial research, Sasken worked with self-help groups engaged in honey production, as well as other self-help groups that focus on identifying markets and taking orders for honey products.

The production and marketing ends of the honey value chain are linked through the VyapaarSEWA mobile phone service. In the honey-producing self-help groups, at least 2-3 designated members subscribe to the application, load it onto their mobiles, and personalize their settings. These designated self-help group members can continuously update their self-help group's honey production and stock information on the system. At the same time, the marketing self-help groups collect orders for honey products and upload these onto the VyapaarSEWA system.

The system then matches demand with supply, maximizing business opportunities along the honey value chain. This not only allows producing self-help groups to access new, larger markets, it also ensures that marketing self-help groups can obtain the quality and quantity of product required. For example, a self-help group may identify an order for 100 kilos of honey, which may be more than a single self-help group can produce. Through VyapaarSEWA, the system can identify all available supplies—possibly pooling stocks across multiple self-help groups—to fulfill the order. Once the order is matched, the system then sends an alert to the parties involved, including to aggregation centers, which launch the process of billing and delivery offline. Aggregation centers collect the product from the self-help groups and deliver to the buyers.

Although financial payments (e.g., for shipping, for orders) are currently handled through traditional banking channels, Sasken expects to switch to mobile banking in the future. The service is available in Tamil, Hindi, and English, with Malayalam in development.

Based on feedback during the pilot period, Sasken continuously modified and improved the product. For example, the original product design allowed an interested customer to call the self-help group directly. Women self-help group members, however, raised concerns about potential nuisance calls or having calls received by their husbands who may not be aware of their participation in the enterprise. As a result, Sasken changed the design of the product. In another example, women self-help group members identified additional needs to strengthen business management and group transparency. Sasken began experimenting with new mobile phone applications that project basic financial statements and metrics, such as profit and loss statements, revenue projections, and margins.

Sasken launched the initial proof of concept for the pilot phase of VyapaarSEWA in March 2011, focusing on 50 beneficiaries. The full pilot will be rolled out to 3,000 women beneficiaries in Tamil Nadu, Kerala, Delhi, and Haryana. During the pilot phase, subscription and usage costs for the application are subsidized by the Sanchar Shakti scheme. For example, the SIM cards are free for the first 30 days, after which women subscribers are charged Rs 10 per month. Sasken is partnering with three local NGOs (Evangelical Social Action Forum, Society for Promotion of Youth and Masses, and Mahalir Thittam) that are building the capacity of various self-help groups engaged in spice and crafts production to use the mobile technology platform to strengthen their market linkages.

BARRIERS ADDRESSED

Sasken's approach to VyapaarSEWA has focused on reducing barriers to achieve better business operations and improve market access. As the program has evolved, additional emphasis on supporting areas, such as training, has helped address more of the barriers faced by women in self-help groups. Table 6 highlights a few:

TABLE 6: How Sasken VyapaarSEWA Addresses Barriers to Women's Entrepreneurship

BARRIERS	SASKEN'S VYAPAARSEWA APPROACHES
Time	• Flexibility of mobile phone applications that can be accessed anytime and from any place allow women to better manage domestic and business responsibilities • Central coordination of key business operations (e.g., ordering) saves time and enhances transparency within the group • Aggregation centers collect produce from the women members' doorsteps, thereby helping them save time on travel or co-ordination and the responsibility of transporting the produce
Skills and Training	• Use of mobile phone as a woman-friendly technology • Capacity-building by NGOs on ICT use and in conducting business using ICTs • Strengthened self-help group understanding of branding and price-setting
Capital and Financing	• Provides low-cost product and approach, thereby making financial costs to access/use technology less of a barrier
Markets	• Mobile phone platform connects self-help groups to remote markets • Application facilitates better business operations, such as inventory and revenues, ensuring better ongoing relationships with customers/markets
Business Networks	• Links self-help groups together, particularly to those outside their geographic area • Mobile phone application creates a tangible business network of women who support each other's business efforts

IMPACT AND SUSTAINABILITY

VyapaarSEWA is still in the pilot phase and the impact of the ICT product on women's entrepreneurship is yet to be seen. However, based on their experience working with self-help groups during initial product research and testing, the Sasken team feels that the potential for this product to facilitate women's success is high. They also noted that women who tested the product were comfortable handling the technology and quick to identify ways in which the application would spur business growth.

Even at the initial stages, Sasken viewed this initiative as a potential business opportunity that also addressed an important social issue. While Sasken understands the value of corporate social responsibility activities as well as the risk of investing in research and development efforts that do not immediately present a commercial opportunity, it was clear from the outset that there needed to be a close business tie if their efforts were to have long-term sustainability. Sasken funded the initial research, in collaboration with IIM Ahmedabad. For the current pilot tests, funding is provided under the Sanchar Shakti scheme, through which Sasken will have a subsidy agreement with the Department of Telecommunications - Universal Service Obligation Fund and is entering into contracts with mobile service providers on a commercial basis. Once VyapaarSEWA is successfully tested and launched, Sasken aims to introduce the mobile service as a commercial offering available to additional self-help groups and will potentially include logistical partners and financial entities.

A challenge to the future sustainability of the program will be presented once Sanchar Shakti support ends. Costs that are currently subsidized will need to be built into the fees that self-help groups and individual members pay for using the mobile application. During the pilot phase, Sasken intends to determine the price point at which this technology can be marketed during the commercial rollout phase.

HIGHLIGHTS: Emerging Initiatives

> **"[We are] in the process of launching a Women's Empowerment Information Service through mobile phones... anything women need to access, know or participate in for growth and development goals."**
>
> — Ninad Vengurlekar
> Vice President of IL&FS ETS

New initiatives are emerging on the Indian scene, and they are increasingly building off two platforms for connecting ICTs with women entrepreneurs: mobile-based technologies and women's cooperatives, especially the self-help group.

SEWA: FONE FREND

The Self Employed Women's Association (SEWA) recently launched the Fone Frend initiative together with the International Finance Corporation (IFC) and Idea Cellular. Based on research that most women in rural Gujarat do not own or use mobile phones, SEWA and the IFC decided to expand access to mobile telephony among rural women while promoting entrepreneurship opportunities for them. Idea Cellular joined this initiative during the design stage to expand its market to women in rural areas and develop and test new mobile-based value-added services.

SEWA and Idea Cellullar worked closely to design mobile phone features that would be helpful for women entrepreneurs. Some features support cost containment through messages that indicate talk time and the cost of the call. Others allow the user to limit prepaid phone usage by entering a specific amount of talk time in rupees. SEWA provides training on operating mobiles and managing microenterprises to Fone Frend entrepreneurs. Women entrepreneurs can run this new business out of their homes or existing shops or stalls they may already own.

The Fone Frend initiative was recently piloted among 200 women entrepreneurs in two districts in the state of Gujarat. Early data indicates that women have been able to earn profits from this entrepreneurial activity, ranging from anywhere between 200-3,000 INR a month. SEWA seeks to support 6,000 total Fone Frend entrepreneurs by the end of 2011 within four districts of Gujarat. It is also exploring other value-added services that entrepreneurs may be able to provide to customers through SMS or talk time, such as mobile banking, bus and railway schedules, government services, and health services.

MADURA MICRO FINANCE LTD: M4

Madura Micro Finance, a leading microfinance institution in Tamil Nadu with 400,000 members through 20,000 self-help groups, has collaborated with Nokia for handsets and with Vodafone for service provision to launch the M4 initiative. The goal is to connect Madura's membership base with mobile connectivity, which can then be used for education, information, training, and finance. Members get a chance to buy a phone with zero percent interest and repayment over five installments, along with low pricing on calls. In the future, members will get loan alerts, along with health tips and other services.[91] However, the main purpose of the initiative is for the self-help group members to be able to reach larger markets.

Madura Microfinance uses its structure, which includes microeducation and micromarkets, to extend innovative ideas and services to its membership base. Microeducation modules include exposure to the Internet, and micromarkets may use ICT-based communications platforms to provide members with information on products, services, or an expanded customer base.

Microfinance institutions (MFIs) that serve self-help groups are a natural ally for telecommunication companies that want to penetrate the large Indian rural market. The Madura-Nokia-Vodafone partnership is already being replicated by other such alliances. India's largest MFI, SKS Microfinance, has connected with Nokia for handsets and Airtel for SIM cards to provide mobile phone services to its members. An important question that these partnerships pose is the extent to which they will help women to advance their businesses rather than simply becoming a channel for companies to market consumer goods to rural populations.

Self-Help Groups and Mobile Value-Added Services—A Growing Business

INFOSYS provided pro bono support to a small Indian ICT business to help design and develop a mobile phone application that stores financial data for bookkeeping by self-help group women entrepreneurs in Andra Pradesh.

NOKIA teamed up with the National Institute of Design and the Center for Innovation, Incubation and Entrepreneurship at IIM-Ahmedabad, as well as the Amul Dairy Cooperative to test the use of a mini mobile phone/PDA that allows data entry by cooperative members on milk production and processing using both key entry and voice-messaging services.

TATA TELE SERVICES LTD. and the Indian Institute of Natural Resources Management (Project VANI) is developing VAS applications that provide end-to-end market linkage data for rural women self-help group members in the Handicrafts sector, with the aim of improving their productivity and overall socio-economic growth.

VODAFONE AND ANKURAM SANGAMAM PORAM are working to develop easy-to-use, interactive, voice-based applications for self-help group members to access daily learning modules of information and remote assistance on financial management and livelihoods, as well as social issues.

IV.

KEY FINDINGS

Our case study analysis and desk research leads us to seven key findings regarding the role of ICTs in fostering women's entrepreneurship in India. While especially pertinent to the Indian context, these findings have relevance for a number of low-income and emerging market economies.

1. WHEN GIVEN THE OPPORTUNITY, WOMEN IN INDIA SEEK OUT AND EMBRACE ICTS, BOTH AS A PLATFORM AND AS A TOOL FOR DEVELOPING BUSINESS.

All four case studies point to the ability and willingness of Indian women to appreciate and engage in ICT-based channels of livelihood and entrepreneurial growth. Women are readily adopting ICTs for business in large part because they recognize its power in breaking traditional gender barriers at home and in the marketplace. It was the active engagement of poor, illiterate rural women that allowed Mann Deshi to set itself up as Satara district's first fully computerized bank as early as the mid 1990s. Similarly, AISECT also began receiving requests from women to own IT centers in the 1990s when the industry was just getting started.

There are two basic channels through which ICTs enhance women's entrepreneurship. Providing ICT products and services is the enterprise for many women, as demonstrated by the AISECT and Hand in Hand case studies. Alternatively, Sasken shows that ICTs can provide tools that make women's enterprises more efficient and profitable. As women entrepreneurs become comfortable with technology, they leverage it to further their business interests, breaking past program boundaries. For example, women entrepreneurs routinely identify products and services beyond the standard program offerings to generate more revenue, as illustrated in the AISECT and Hand in Hand case studies. ICT tools, which were core to programs by Mann Deshi and Sasken, can facilitate women's self-generated options for entrepreneurial growth.

Having an ICT business is particularly attractive to Indian women because it garners family support and social acceptance. Most women entrepreneurs interviewed were vocal about family support being an imperative for business success. In India, education is considered a respected profession—especially for women—and technology carries stature and legitimacy. The business of ICT education presents a winning social combination for women entrepreneurs. The AISECT and Hand in Hand case studies demonstrate that this combination is waiting to be optimized.

2. MOBILE PHONES, MORE SO THAN COMPUTERS OR THE INTERNET, EQUIP WOMEN TO DRIVE THEIR OWN ENTREPRENEURIAL SUCCESS.

The true potential of ICTs for women's entrepreneurship in India lies in how women use these tools to build their businesses beyond program expectations. While women use all forms of ICTs—computers, the Internet, and mobile phones—to explore new avenues for success, the mobile phone is the technology that is most supportive of this autonomous drive. It is noteworthy that mobile phones

are the common technology component across all four case studies, reflecting how widespread and relatively inexpensive a business tool they represent. Moreover, it is increasingly clear that the portability, ease of use, and individual control that mobile phones provide make them a particularly woman-friendly tool for business success.

Initiatives such as AISECT and Hand in Hand, which are heavily computer- and Internet-based, require higher literacy levels for women to enter the business arena. Moreover, they have substantial capital costs and training elements, requiring significant program initiative and investment in facilitating women's business success. As such, they may be viable for more educated and financially secure women.

Some level of financial and skill-building support is also necessary for the effective and optimal use of mobile phones by low-income women. Initiatives such as Sasken and Mann Deshi are structured to address this need. For example, women often need loans or subsidies to buy mobile phones, as well as training to use key features. In most cases, it is easy for women to take on ventures of their own with their mobile phones, whether it is to send mass text messages to potential customers, or to connect with other input providers in the market. Internet access via mobiles is a limited feature for women with small enterprises, but these case studies highlight the potential for women to use and benefit if it were to be more widely available.

3. ICTS FOR WOMEN'S BUSINESSES IN INDIA ARE PROVIDING A UNIQUE OPPORTUNITY TO EMPOWER WOMEN ON MULTIPLE FRONTS.

The initiatives highlighted in the four case studies illustrate that women are not only benefitting personally and professionally by incorporating ICTs in their business, they are serving as natural conduits for creating acceptance, proliferation, and use of technology in their families, communities, and the emerging markets where they live and do business. Most importantly, they are directly and indirectly serving as agents of change for other women, especially young women.

ICTs make business operations flexible for women. Each initiative documented suggests that harnessing ICTs for women is key to more women entrepreneurs succeeding in business. It enables women entrepreneurs to mold their business models around their multiple roles and responsibilities as homemakers and primary caregivers to their families. Computers, the Internet, and especially the mobile phone bring the market home and enable women entrepreneurs to multitask: they can keep an eye on domestic concerns while staying in touch with clients, vendors, bankers, and others. Forging this fluid connection between the market and home has dramatically altered women's capacities to succeed as entrepreneurs.

The four cases studies also illustrate that when women employ ICTs, they are often furthering their business success in terms of increased revenues and sales, and higher rates of business expansion. But the resulting sense of self-confidence and self-value seem to be even more important than long-term gains. For example, women from both AISECT and Hand in Hand emphasized the social gains from their business experience, noting that the experience of managing IT educational centers has given them greater self-confidence, increased their value as income-earners in the family, and earned them respect and status in the community.

Our case studies indicate that there is a tremendous cascading effect of women sharing their new ICT expertise with other women, multiplying the potential impact of such programs. ICTs in the hands of women entrepreneurs provide both a supportive environment and role models, especially for young women. All programs note that women participants often formally and informally direct their services and knowledge to other women, which leverages program investments. Thus, it is not surprising that women and girls make up approximately 80 percent of the customer base of IT centers that are run by women.

4. ICT OUTREACH TO WOMEN ENTREPRENEURS IN INDIA IS A NASCENT EFFORT THAT PROMISES GREATER IMPACT WITH ADDITIONAL INTERVENTION AND INVESTMENT.

In India, initiatives that mobilize ICTs for women's entrepreneurship show promise. Our extensive search for case studies produced a limited number of initiatives, suggesting that a proactive connection between ICTs and women's business opportunity is only beginning to surface. As an emerging market and the largest democracy in the world, India presents a rich context in which the motivations of economic growth and social equity comingle, and ICTs are well recognized as a means for achieving both goals.

In this mix, however, the goal of improving women's economic opportunity is not yet a widespread focus. In all four initiatives, this key three-way connection has emerged only since 2006–2007. The critical element that connects women, ICTs, and business has been a relatively recent phenomenon even for AISECT and Mann Deshi, the two initiatives with the longest history, dating to the mid 1990s. Equally important, these creative initiatives are reaching only a few thousand women, at best, in a land of more than half a billion women.

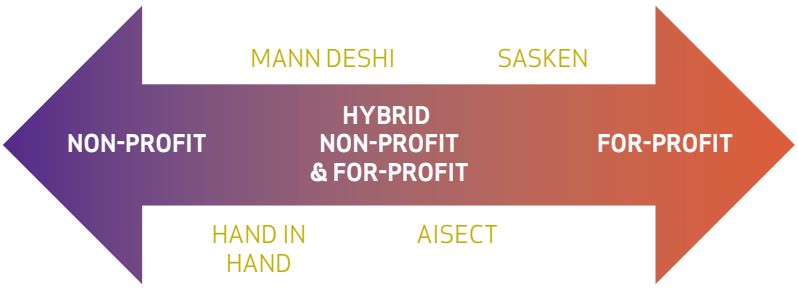
Moreover, from our documentation of the case studies and the most recent emerging initiatives, it is clear that some of the most interesting possibilities for mobilizing technology innovations in ICTs for women's business success are only just beginning to coalesce; many untapped opportunities remain. Women often just supply ICT services to others or use the basic features of mobile phones and the Internet to communicate and receive information. Some of the most dynamic technology applications that have the greatest potential to catapult women's enterprises—such as voice technology, mobile-based learning tools, banking applications, entrepreneurship training, and market information—are still in the early stages of development. As such, they present the frontier for technological innovation that could lead to both economic growth and gender equity.

5. CROSS-SECTORAL PARTNERSHIPS ARE CORE TO THE BUSINESS MODELS OF INITIATIVES THAT LINK WOMEN ENTREPRENEURS WITH ICTS.

It is evident that the dynamic environment in India is spurring collaboration across diverse actors in an effort to connect women entrepreneurs with ICTs. The combined impetus from the government, civil society, and the private sector is pervasive in the initiatives we examined. Each program brings together different stakeholders and partners to design, implement, and finance activities. These cross-sectoral partnerships prevail regardless of the program's primary motivation, which may range from a desire to tap underserved markets, create democratic transparency through e-governance, take advantage of self-help groups as a platform for building women's enterprises, expand banking and finance to a broader population base, or just achieve gender equity more broadly.

As a result, the operating business models for the programs we examined tend to fall somewhere along the middle rather than the extremes of the spectrum between non-profit versus for-profit initiatives. All of these programs bring together an interesting mix of stakeholders from the public, for-profit, non-profit, and social enterprise worlds. Within these partnerships, there is a degree of variation, with some clearly led by a single proactive actor, as in the case of Sasken, and others involving multiple active partnerships, as, for example, Mann Deshi, which has public- and private-sector partners and multiple for-profit and non-profit entities under a common umbrella.

FIGURE 6: Program Business Models



This range of operational models and partnerships underscore both the tremendous opportunities and challenges presented by the current Indian environment. On one hand, there seems to be no limit to the way in which diverse players can bring their relative strengths and assets together to support women entrepreneurs with ICTs. On the other hand, there is a constant need to coordinate and align perspectives, styles, and priorities across different partners to ensure that as technology is mobilized, the interests of women entrepreneurs are fully understood and met. Hybrid and social enterprise models, with a foot in both the for-profit and non-profit worlds, serve an important translation role in this process.

> **"In the recent past, there have been several internal discussions, prototyping and modeling of products that are enabling for women entrepreneurs in rural areas. But this is easier said than done. There are several challenges—the most prominent being that we need to bring together five or more multi-stakeholders around the same table to create these products, get investments for them, and pilot them out."**
>
> **— Bhanu Potta,**
> **Nokia Lifetools**

At the same time, limited public information on operating models and initiatives in the women's entrepreneurship and ICT space led by the private sector suggests two possibilities. The first is that such models are being developed but without active multi-sectoral engagement, and concerns for research and development confidentiality keep them out of the public view. The second is that the private sector still sees gender issues as the purview of the social sector, and corporate players have yet to take full advantage of the current collaborative environment and reach out to women as ICT business consumers. Concurrently, civil society and government, despite their goals toward gender equity, may also not fully appreciate the role that the private sector can play in helping women catalyze their businesses through technology.

6. SCALE AND SUSTAINABILITY REMAIN A CHALLENGE FOR MOST INITIATIVES PROMOTING ICTS FOR WOMEN'S ENTREPRENEURSHIP.

Many multi-sectoral partnerships are relatively new experiments. It is not clear that the key elements to the success of current initiatives can be sustained over the long run to benefit millions rather thousands of women entrepreneurs. Initiatives with primarily social motivations—such as Hand in Hand and Mann Deshi—are finding that they must reach out to the private sector for product innovation, financial subsidies, and expanded business possibilities for women entrepreneurs. In the process, they hope to bring significant numbers of organized women, such as self-help groups, as a ready market for private-sector firms. Thus far, however, relatively few corporate players recognize this potential. Companies such as Sasken, Nokia, and Idea Cellular are recent exceptions to the rule. More commonly, companies follow the Uninor example of seeing such overtures more as an opportunity for corporate social responsibility.

Moreover, initiatives that have a market orientation toward women entrepreneurs, such as Sasken and AISECT, tend to either be in the pilot stages or not yet "woman friendly" enough for large proportions of their client base to be women. For example, AISECT issues only about 25 percent of its franchises to women despite its deliberate outreach and adaptations to launch more woman-run IT centers.

Building on existing platforms is one way of reaching more women. Three of the four case studies reinforce that women in self-help group networks, which have built-in credit lines, financial discipline, and trust-based relationships, are perhaps ideally equipped to enter into successful partnerships with IT and mobile telephone companies, both as consumers and rural distribution channels. The more creative emerging initiatives also recognize the power of existing women's collectives as the entry point for advancing both women's and the ICT industry's interests simultaneously.

However, since women in India continue to face substantial structural disadvantages in lack of capital and skills, they can take full advantage of these platforms only when subsidized forms of training and direct financial linkages are available for them. It is not yet clear if expansion can be achieved without subsidized support services, either through government initiatives or donor funding.

7. ICTS MOST EFFECTIVELY ADDRESSES THE TIME AND MARKET BARRIERS FOR WOMEN ENTREPRENEURS.

All the programs we documented try to address barriers to women's entrepreneurial success through ICTs in some form or another, whether it be the time savings through mobile phone contact with customers and suppliers, or the use of the Internet to market services and products. For the most part, the ICT advantage seems to be in overcoming women's lack of time and access to markets. As noted earlier, the woman-friendly nature of technologies like mobile phones allows women to eliminate travel, facilitates multitasking, and coordinates business with domestic responsibilities. Similarly, initiatives such as AISECT or Hand in Hand's provision of the Internet for reaching customers, or Mann Deshi's effort to develop mobile applications that provide women with market information are also eroding market barriers for women.

As some of the emerging innovations in technology have begun to materialize and start reaching larger numbers of women, it is likely that ICTs will better address financial and skill barriers as well. Innovations on financial access such as the e-card and mobile banking are a recent phenomenon. In most cases, financial access is facilitated through traditional subsidization or loan products.

Surprisingly, despite the potential of ICTs to connect women beyond their traditional circles, the lack of effective networks was a barrier that was addressed only in a limited fashion through the programs we reviewed. Very few initiatives underway use technology to facilitate information-sharing, mentoring, peer support, or business collaboration for women entrepreneurs. Overcoming these barriers will require more sophisticated engagement by women with social networking platforms.

It is worth noting that although changing social norms are often not the intended purpose of most programs, women's use of ICTs for business is beginning to shift perceptions about women's roles and position in society. Since the scale thus far is small, we are witnessing only the early signs of an increase in the economic and social status of women entrepreneurs in their families and communities as they initiate and grow business with ICTs. Programs are showing increased acceptance of business as women's work. However, a much larger number of women entrepreneurs will have to enter this pool to create the critical mass that leads to a more substantial and lasting shift in norms.

TABLE 7: Addressing Barriers to Women's Business Success

	MOST FREQUENT	EVOLVING
Time	• Home-based ICT businesses • Flexibility and reach of mobile phones	• Mobile-based business management • Banking services via e-card
Access to Markets	• Link to markets information via mobiles • Link to suppliers for product tie-ins via ICTs	• Link to new markets and business opportunities via mobiles and internet
Social Norms	• ICTs as acceptable and valued business venture for women • Information and skills sharing among women	• Women as business role models • Women as leaders and providers of services in community
Skills and Training	• Online & ongoing skill building in business and ICTs	• Business training and capacity building via mobiles • Women friendly ICT-based tools for business
Finance and Capital	• Women-friendly banking products • Financing for entrepreneurship • Subsidizing start-up costs	• Women-friendly credit and savings products via ICTs (e.g., e-card)
Business Networks		• Mentoring services via mobile phones • Strengthening SHG networks through mobiles

V.

CONCLUSION AND RECOMMENDATIONS

ICTs are attractive to women entrepreneurs as business tools and as business endeavors because of their economic benefits and social acceptability. In their ubiquity, mobile phones in particular provide women with the freedom to innovate entrepreneurial success and a resource to balance competing demands at home and at work. ICTs are empowering business women on multiple fronts while also creating a ripple effect in their families and communities, especially among the young generation of women and girls whose skills and aspirations are being shaped by these new role models.

Using ICTs to impel women's entrepreneurship in India is a potentially powerful, but as yet unrealized market opportunity. Many of the necessary players—government, private sector, civil society and social entrepreneurs—have begun to forge common ground in bringing important features of information and communications technologies to women entrepreneurs. Admirably, these efforts are frequently motivated by the desire to ensure that women are part of the government and civil society's commitment to equity and social inclusion as the country grows economically. What is less evident is a clear understanding of the economic power that women represent: they are not just a market base for ICTs as a consumption good, but an untapped market for ICTs as a production and business tool. It is only with this recognition that ICT products and services can truly cater to business women and build large scale, sustainable initiatives that are not just philanthropically supported, but market driven.

To fulfill the promise of ICTs for women's business growth in countries like India, active investment and engagement by the relevant stakeholders is required. Below, we provide specific recommendations for governments, the private sector, and the development community. By taking on these concrete actions, they can help achieve this potential for the women and countries that are their key constituents.

GOVERNMENT

1. **Fast-track financial inclusion efforts and set targets for numbers of businesswomen reached.**
2. **Refine e-governance initiatives, ensuring that women are not a sidebar or add-on but core to policy execution.**
3. **Streamline current incentives and subsidies, measuring effectiveness to ensure that resources are mobilized where results for women and accountability are high.**
4. **Invest in infrastructure development to facilitate ICT use in areas where women's businesses have a chance to grow.**
5. **Support hybrid business models and private-sector partnerships to maximize new opportunities and sustainability.**

PRIVATE SECTOR

1. Go beyond women as part of corporate social responsibility and make it part of core business strategy.
2. Explore the potential of businesswomen as consumers of ICTs and develop strategies for tapping their latent demand.
3. Explore the potential of women as distributors of ICTs and develop strategies for tapping their networks.
4. Develop more woman-targeted applications, actively consulting with women in the process, and making ICTs a true enablement device.
5. Gather gender-disaggregated data on consumers, retailers, employees, and product relevance.
6. Seek woman-specific expertise and platforms generated by the non-profit and public sectors.
7. Include women in senior corporate positions to ensure that women can participate in technology development.

DEVELOPMENT ORGANIZATIONS

1. Support data collection and analysis of women's business intersection with ICTs, including the potential of existing women's collectives for ICT and business growth.
2. Package and translate expertise on women for government and private-sector partners.
3. Foster coordination between multiple stakeholders—especially ICT companies, non-profits working on women's economic opportunities, academia, and government.
4. Provide incentives and forums for collaboration on technology innovation that create woman-relevant content.
5. Work with governments on providing timely regulatory frameworks.
6. Use technology as tools for program development around entrepreneurship.

Endnotes

1 Malhotra et al. (2009).

2 GSMA Development Fund (2010).

3 Gill et al. (2010).

4 Gill et al. (2010).

5 The Economist (2006).

6 Sen (2007), cited in OECD (2010).

7 World Bank (2010).

8 OECD (2010); IMF Survey Maganize (2011).

9 The Economic Times (2011a).

10 World Bank (2011b).

11 Government of India (2011b); CIA (2011).

12 Ahuja et al. (2006).

13 UNICEF (n.d.).

14 Dhoot (2008).

15 Agrawal (2008).

16 OECD (2010).

17 Bhattacharya (n.d.); IBEF (2011).

18 Ministry of Statistics and Programme Implementation (2010).

19 OECD (2010).

20 CyberMedia Research. (2011).

21 Telecomm Regulatory Authority of India (2011).

22 IBEF (2011).

23 Puri, cited in The Economic Times (2011b).

24 Chandrasekhar and Ghosh (2011), based on 2009-2010 data from the National Sample Survey Organization, and 2001 and 2011 Census data.

25 Chandrasekhar and Ghosh (2011), based on 2009-2010 data from the National Sample Survey Organization, and 2001 and 2011 Census data.

26 Chandrasekhar and Ghosh (2011).

27 World Economic Forum (2011).

28 World Economic Forum (2009).

29 Hewlett and Rashid (2011).

30 World Economic Forum (2010).

31 World Economic Forum (2010).

32 Development Commissioner Ministry of Micro, Small & Medium Enterprises (2009), citing data from the Fourth All India Census of Micro, Small & Medium Enterprises, 2006-2007.

33 Government of India (2010); Basargekar (2007).

34 Chandrasekhar & Ghosh (2011).

35 R. Aggarwal, personal communication, November 16, 2010; Kitching, Mishra and Shu (2005).

36 R. Aggarwal, personal communication, November 16, 2010; N. Vengurlekar, personal communication, November 15, 2010; Nayyar et al. (2007), cited in Basargekar (2007); Kantor (2005); Kitching, Mishra and Shu (2005); Handy, Kassam and Ranade (2002); Mitra (2002); Das (1999).

37 National Family Health Survey-3 2005-06, cited in Business Standard (2010).

38 Digal and Bal (2010); Kitching, Mishra and Shu (2005).

39 Mitra (2002); Vishwananthan (2001); Das (1999).

40 Basargekar (2007); Mukherjee (2009), cited in Lemmo (2009).

41 Shastri and Sinha (2010); Blake (2006), cited in Basargekar (2007).

42 Muralidharan (2009).

43 Handy, Ranade and Kassam (2007).

44 Mukherjee (2009); Mitra (2002); Kitching, Mishra and Shu (2005); Das (1999).

[45] Umarji and Garg (2011).
[46] Hewlett and Rashid (2010).
[47] B. Potta, personal communication, December 9, 2010.
[48] Nagadevara (2009).
[49] Vishwananthan (2001).
[50] S. Eashwar, personal communication, December 20, 2010; Digal & Bal (2010); Basargekar (2007).
[51] Government of India (2010).
[52] R. Aggarwal, personal communication, November 16, 2010; Z. Kaur, personal communication, November 3, 2010.
[53] Dahlman & Utz (2005).
[54] Ministry of Statistics and Programme Implementation (2010).
[55] The Economic Times (2007).
[56] Tele.net.in. (2009).
[57] Telecomm Regulatory Authority of India (2011).
[58] Telecomm Regulatory Authority of India (2011).
[59] GSMA and Cherie Blair Foundation for Women (2010).
[60] Vital Wave Consulting (2010).
[61] Vital Wave Consulting (2010).
[62] Business Review India (2011).
[63] Business Review India (2011).
[64] UNCTAD (2011a).
[65] International Energy Agency (2009).
[66] Internet and Mobile Association of India (2007).
[67] Internet and Mobile Association of India (2007).
[68] UNCTAD (2011a).
[69] Government of India (2011a).
[70] M.S. Sirohi, personal communication, November 2, 2010.
[71] Patil, cited in Joshi (2011).
[72] Mahesh (n.d.).
[73] Wilson and Sinha (2006).
[74] Isern et al. (2007).
[75] R. Aggarwal, personal communication, November 16, 2010.
[76] R. Aggarwal, personal communication, November 16, 2010.
[77] NASSCOM and Mercer (2009); CIA (2011).
[78] NASSCOM Foundation and Deloitte (2008).
[79] NASSCOM and Mercer (2009).
[80] NASSCOM and Mercer (2009).
[81] Kelkar and Nathan (2002).
[82] NASSCOM and Mercer (2009).
[83] NASSCOM and Mercer (2009).
[84] R. Aggarwal, personal communication, November 16, 2010.
[85] Kitching, Mishra and Shu (2005); B. Potta, personal communication, December 9, 2010.
[86] GSMA Foundation (2010).
[87] B. Potta, personal communication, December 9, 2010.
[88] B. Potta, personal communication, December 9, 2010.
[89] M.S. Sirohi, personal communication, November 2, 2010.
[90] Annan, cited in Pain (2005).
[91] Madura Micro Finance (2011).

Annex A: References

Agrawal, A. (2008). *The need for financial inclusion with an Indian perspective*. IDBI Gilts. Retrieved August 2011, from http://www.oecd.org/dataoecd/16/55/40339652.pdf.

Ahuja, S. et al. (2006). *Economic Reform in India: Task Force Report,* University of Chicago. Retrieved August 2011, from http://harrisschool.uchicago.edu/news/press-releases/ipp%20economic%20reform%20in%20india.pdf.

Basargekar, P. (2007). Women entrepreneurs: Challenges faced. *The Icfai Journal of Entrepreneurship Development, 4*(4), 6-15.

Bhattacharya, M. (n.d.). *Telecom Sector in India: Vision 2020*. Background Paper submitted to the Committee on India: Vision 2020. Retrieved August 2011, from www.planningcommission.nic.in/reports/genrep/bkpap2020/1_bg2020.doc.

Blake, M.K. (2006). Gendered lending: Gender, context and the rules of business lending. *Venture Capital,* (8)2, 183-201.

Business Review India. (2011, August 9). Mobile Banking in India. Retrieved August 2011, from http://www.businessreviewindia.in/technology/mobile-banking-in-india.

Business Standard (2010, November 4). Indus analytics: Why India has a drink problem. Retrieved October 2011, from http://www.business-standard.com/india/news/indicus-analyticsindia-hasdrink-problem/413679/.

Chandrasekhar, C.P. & Ghosh, J. (2011, August 9). Women's work in India: Has anything changed? *The Business Line.* Retrieved August 2011, from http://www.macroscan.org/fet/aug11/fet090811Women.htm.

CyberMedia Research. (2011, July 24). Press release. Retrieved July 2011, from http://www.cybermedia.co.in/press/pressrelease187.html.

D'Cruz, N.K. (2003). *Constraints on women entrepreneurship development in Kerala: An Analysis of familial, social and psychological dimensions.* (Discussion Paper No. 53). Thiruvananthapuram, India: Centre for Development Studies. Retrieved August 2011 from, http://www.esocialsciences.com/data/articles/Document1138200590.5478479.pdf.

Dahlman, C. & Utz, A. (2005). *India and the knowledge economy: Leveraging strengths and opportunities.* Washington, DC: The World Bank. Retrieved August 2011, from http://info.worldbank.org/etools/docs/library/145261/India_KE_Overview.pdf.

Das, M. (1999). Women entrepreneurs from Southern India: An Exploratory study. *Journal of Entrepreneurship, 8*(2), 147-163.

Development Commissioner (MSME) Ministry of Micro, Small & Medium Enterprises. (2009). *Micro, Small & Medium Enterprises in India: An Overview.* Retrieved April 2011, from http://dcmsme.gov.in/ssiindia/MSME_OVERVIEW09.pdf.

Development Commissioner (MSME) Ministry of Micro, Small & Medium Enterprises. (2009). *Quick Results: Fourth All India Census of Micro, Small & Medium Enterprises, 2006-2007.* Retrieved April 2011, from http://www.dcmsme.gov.in/publications/census10.pdf.

Dhoot, V. (2008, June 10). New employment policy to beat jobless growth. *The Financial Express.* June 2008. Retrieved August 2011, from http://www.financialexpress.com/news/New-employment-policy-to-beat-jobless-growth/321175/.

Digal, S.K. & Bal, R.K. (2010). Motivating women entrepreneurs in Orissa: An Enquiry into its dynamics in a comparative setting. *The XIMB Journal of Management,* March, 123-140.

Dun and Bradstreet India. (2010). *Indian Telecom Industry.* Retrieved July 2011, from http://www.dnb.co.in/IndianTelecomIndustry/default.asp.

The Economic Times. (2011a, July 24). How the Indian economy changed in 1991-2011. Retrieved September 2011, from http://articles.economictimes.indiatimes.com/2011-07-24/news/29807511_1_market-economy-scooters-india-s-gdp.

The Economic Times. (2011b, July 7). Give women a fair chance for quantum jump in Indian economy. Retrieved September 2011, from http://articles.economictimes.indiatimes.com/2011-07-07/news/29747958_1_women-judges-equal-opportunity-gender-equality.

The Economic Times. (2007, November 22). Indian telecom market to be at Rs. 344,921 crore by 2012. Retrieved May 2011, from http://articles.economictimes.indiatimes.com/2007-11-22/news/27666023_1_indian-telecom-market-size-growth-rate.

The Economist. (2006, April 12). Women in the workforce: The Importance of sex. Retrieved August 2011, from http://www.economist.com/node/6800723.

Gill, K., Brooks, K., McDougall, J., Patel, P. & Kes, A. 2010. *Bridging the gender divide: How technology can advance women economically.* Washington, DC: ICRW.

Government of India, Ministry of Communication & Information Technology, Department of Information Technology. (2011a). *Common Services Centers, Enabling Service Delivery: Bridging the Digital Gap.* Retrieved August 2011, from http://www.mit.gov.in/sites/upload_files/dit/files/BackgroundDocumentCSCScheme_20711.pdf

Government of India, Ministry of Home Affairs. (2011b). 2011 Census. Retrieved August 2011, from http://censusindia.gov.in/

Government of India. (2010). *Report of Prime Minister's Task Force on Micro, Small and Medium Enterprises.*

GSMA Development Fund and Cherie Blair Foundation for Women. (2010). *Women and Mobile—A Global Opportunity: A Study on the mobile phone gender gap in low and middle-income countries.* London: GSMA.

Handy, F., Ranade, B., & Kassam, M. (2007). To Profit or not to profit: Women entrepreneurs in India. *Nonprofit Management & Leadership, 17*(4), 383-401.

Handy, F., Kassam, M., & Ranade, S. (2002). Factors influencing women entrepreneurs of NGOs in India. *Nonprofit Management and Leadership, 13*(2), 139-154.

Hausmann, R., Tyson, L.D., & Zahidi, S. (2010). *The Global Gender Gap Report.* Geneva: World Economic Forum.

Hewlett, S.A. & Rashid, R. (2011, August 29). Why are India's women so stressed out? *Harvard Business Review.* Retrieved October 2011, from http://blogs.hbr.org/hbr/hewlett/2011/08/why_are_indias_women_so_stress.html.

Hewlett, S.A. & Rashid, R. (2010, December 3). India's crown jewels: Female talent. *Harvard Business Review.* Retrieved October 2011, from http://blogs.hbr.org/hbr/hewlett/2010/12/indias_crown_jewels_female_tal.html.

Illiyan, A. (2008). Performance, challenges and opportunities of Indian Software Export. *Journal of Theoretical and Applied Information Technology.* Retrieved July 2011, from http://www.jatit.org/volumes/research-papers/Vol4No11/11Vol4No11.pdf.

Ilavarasan, P.V. & Levy, M.R. (2010). *ICTs and urban microenterprises: Identifying and maximizing opportunities for economic development. Final Report.* Retrieved April 2011, from http://web.idrc.ca/uploads/user-S/12802403661ICTs_and_Urban_Microenterprises_104170-001.pdf.

India Brand Equity Foundation (IBEF) (2011). Telecommunications Industry. Retrieved June 2011, from http://www.ibef.org/industry/telecommunications.aspx.

International Energy Agency (IEA) (2009). World Energy Outlook. Retrieved September 2011, from http://www.iea.org/weo/electricity.asp.

International Monetary Fund (IMF) Survey Magazine. (2011). *India: Rapid Growth with Promising Mid-term Prospects.*

Internet and Mobile Association of India. (2007). *Internet in India: I-Cube 2007.* Retrieved July 2011, from http://www.domain-b.com/infotech/itnews/images/I-Cube%202007%20Summary%20Report.pdf.

Isern, J. et al. (2007). *Sustainability of self-help groups in India: Two Analyses.* (OccassionalPaper No. 12). CGAP. Retrieved September 2011, from http://www.cgap.org/gm/document-1.9.2706/OP12.pdf.

Joshi, S. (2011, March 8). President launches unique ICT scheme for women. *The Hindu.* Retrieved August 2011, from http://www.thehindu.com/news/national/article1517932.ece.

Kantor, P. (2005). Determinants of women's microenterprise success in Ahmedabad, India: Empowerment and economics. *Feminist Economics, 11*(3), 63-83.

Kelkar, G. & Nathan, D. (2002). Gender relations and technological change in Asia. *Current Sociology, 50*, 427-441.

Kitching, B.M., Mishra, R. & Shu, X. (2005). *Female entrepreneurs in transitional economies: A Comparative study of women in the business workplace in India and China.* (ABERU Discussion Paper 16). Monash University.

Lemmo, A. (2009). *Women entrepreneurs in India: Bottlenecks and Opportunities.* Background for Women Mean Business Conference, 11 December 2009.

Mahesh, N. (n.d.). It's for her business: Loans for women entrepreneurs. *Small Enterprise India.com.* Retrieved November 2010, from http://smallenterpriseindia.com/index.php?option=com_content&view=article&id=295:its-for-her-business-loans-for-women-entrepreneurs&catid=52:sme-banking&Itemid=80.

Madura Micro Finance website. (2011). Retrieved September 2001, from http://www.maduramicrofinance.com.

Malhotra, A., Schulte, J., Patel, P. & Petesch, P. (2009). *Innovation for Women's Empowerment and Gender Equality.* Washington, DC: ICRW.

Ministry of Statistics and Programme Implementation. (2010). *Value Addition and Employment Generation in the ICT sector in India.* Retrieved July 2011, from http://mospi.nic.in/val_add_ICT_sec_11may10.pdf.

Mitra, R. (2002). The Growth-pattern of women-run enterprises: An Empirical study in India. *Journal of Developmental Entrepreneurship, 7*(2), 217-237.

Mukherjee, S. (2009). Women entrepreneurship development: The Catalytic role of NGOs. *ICFAI Journal of Entrepreneurship Development, 6*(2), 21-38.

Muralidharan, A. (2009, June 1). Why loans for women entrepreneurs are not taking off. *DARE: Because Entrepreneurs Do.* Retrieved July 2011, from http://dare.co.in/funding/banks-loans/why-loans-for-women-entrepreneurs-are-not-taking-off.htm.

Nagadevara, V. (2009). Impact of gender in small scale enterprises: A Study of women enterprises in India. *Journal of International Business and Economics, 9*(1).

. (2009). *Gender inclusivity in India: Building empowered organisations.* 2009. New Delhi: NASSCOM. Retrieved April 2011, from http://www.nasscom.in/upload/68117/NASSCOM-Mercer-Gender-Inclusivity-Report.pdf.

NASSCOM Foundation & Deloitte. (2008). *Indian IT/ITES industry: Impacting economy and society 2007-2008.* New Delhi: NASSCOM Foundation. Retrieved June 2011, from http://www.deloitte.com/assets/Dcom-India/Local%20Assets/Documents/Nasscom%20Booklet%20Executive%20summary%20fow%20web(3).pdf.

National Bank for Agriculture and Rural Development (NABARD). (2009). *Status of Microfinance in India: 2008-2009.* Retrieved October 2011 from http://www.nabard.org/pdf/Status%20of%20Microfinance%20in%20India%202008-09_131109.pdf

Nayyar, P. et al. (2007). Causes and constraints faced by women entrepreneurs in entrepreneurial process. *Journal of Social Sciences, 14*(2), 99-102.

Organization for Economic Co-operation and Developement (OECD). (2010). *The Information and Communication Technology Sector in India: Performance, Growth and Key Challenges.* Retrieved July 2011, from http://www.oecd.org/dataoecd/55/56/45576760.pdf.

Pain, P. (2005, December 11). Open platform. *The Hindu Magazine.* Retrieved August 2011, from http://www.hindu.com/thehindu/mag/2005/12/11/stories/2005121100280400.htm.

Sarma, M. (2008). *Index of Financial Inclusion.* Working Paper No. 215. New Delhi: Indian Council for Research on International Economic Relations. Retrieved September 2011, from http://www.icrier.org/pdf/Working_Paper_215.pdf.

Sen, A. (2007). Address to the NASSCOM India Leadership Summit, 2007. Retrieved September 2011, from http://www.nasscom.in/upload/51245/Amartya_Sen.pdf.

Shastri, R.K. & Sinha, A. (2010). The Socio-cultural and economic effect on the development of women entrepreneurs (with special reference to India). *Asian Journal of Business Management, 2*(2), 30-34.

Telecomm Regulatory Authority of India. (2011). *India Telecom Service Performance Indicators, January-March 2011*. Retrieved July 2011, from http://www.trai.gov.in/WriteReadData/trai/upload/Reports/55/Indicator_Report-Mar-11.pdf,.

Tele.net.in. (2009, March 15). Winds of change: Women begin to make their mark in telecom. Retrieved April 2011, from http://www.tele.net.in/trends-a-developments/item/4609-winds-of-change.

Umarji, V. & Garg, S. (2011, July 28). B-schools to see more female students. *Business Standard.* Retrieved August 2011, from http://business-standard.com/india/news/b-schools-to-see-more-female-students/444100/.

UNICEF. (n.d.). India, Education website. Retrieved July 2011, from http://www.unicef.org/india/education.html.

United Nations Conference on Trade and Development (UNCTAD). (2011a). *Information Economy Report 2011: ICTs as an enabler for private sector development.* Geneva: UNCTAD.

United Nations Conference on Trade and Development (UNCTAD). (2011b). *World Investment Report 2011.* Geneva: UNCTAD.

Vishwananthan, R. (2001, November). Opportunities and challenges for women in business. *India Together.* Retrieved November 2010, from http://www.indiatogether.org/women/business/renuka.htm.

Vital Wave Consulting, Inc. (2010). India data sets from the *Women and Mobile: A Global Opportunity survey.* [Survey formed the basis of the report "Women & Mobile: A Global Opportunity," completed for the GSMA Development Fund and Cherie Blair Foundation for Women.]

Wilson, K. & Sinha, F. (2006). *Self-help groups in India: A Study of the lights and shades.* CARE, CRS, USAID, GTZ. Retrieved August 2011, from http://www.apmas.org/pdf%5Cm.pdf.

World Bank. (2011a). *Edstats*, India [Data file]. Retrieved August 2011, from http://ddp-ext.worldbank.org/ext/ddpreports/ViewSharedReport?&CF=&REPORT_ID=10803&REQUEST_TYPE=VIEWADVANCED&DIMENSIONS=86&HF=N.

World Bank. (2011b). *World Development Indicators* [Data file]. Retrieved September 2011, from http://data.worldbank.org/Indicator/NY.GDP.PCAP.CD?page=1

World Bank. (2010). *India: Reducing poverty, maximizing growth.* Retrieved August 2011, from http://siteresources.worldbank.org/IDA/Resources/73153-1285271432420/IDA_AT_WORK_India.pdf.

World Bank. (2008). New global poverty estimates: What it means for India. Retrieved October 2011 from http://www.worldbank.org.in/WBSITE/EXTERNAL/COUNTRIES/SOUTHASIAEXT/INDIAEXTN/0,,contentMDK:21880725~pagePK:141137~piPK:141127~theSitePK:295584,00.html.

The World Factbook 2011. Washington, DC: Central Intelligence Agency, 2011. https://www.cia.gov/library/publications/the-world-factbook/index.html.

World Economic Forum. (2011). *The Global Gender Gap Report 2011.* Retrieved October, 2011 from http://www3.weforum.org/docs/WEF_GenderGap_Report_2011.pdf.

World Economic Forum. (2010). *The Corporate Gender Gap Report 2010.* Retrieved October, 2011 from https://members.weforum.org/pdf/gendergap/corporate2010.pdf.

World Economic Forum. (2009). *The India Gender Gap Review 2009.* Retrieved October 2011, from https://members.weforum.org/pdf/gendergap/IGGR09.pdf.

Annex B: Experts Interviewed

Below is a list of the key informant experts interviewed during this research, including the titles and organizational affiliations they held at the time the interviews were conducted:

1. Dr. Rajnee Aggarwal, President, Federation of Indian Women Entrepreneurs
2. Dr. Rakesh Basant, Professor, Indian Institute of Management Ahmedabad
3. Varsha B.V., Delivery Manager, InfoSys
4. Sucharita Eashwar, Senior Director, NASSCOM
5. Shachi Irde, Senior Diversity and Inclusion Lead, InfoSys
6. Deval Kartik, Faculty & Coordinator, Discipline of Strategic Design Management, National Institute of Design
7. Zankhana Kaur, Program Director of Mentoring, TiE Stree Shakti
8. Rushi Laheri, Manager of IT, SEWA
9. Reema Nanavaty, Director, SEWA
10. Laura Parkin, CEO, National Entrepreneurship Network
11. Bhanu Potta, Global Product Manager - Learning & Knowledge Services, Nokia
12. S.R. Raja, Associate Vice President - Strategy, Sasken Communication Technologies
13. C.N. Raghupathi, VP and Head - India Business, InfoSys
14. Dr. Kavil Ramachandran, Associate Dean of Academic Programs, The Indian School of Business (Hyderabad)
15. Shashank Rastogi, Director, Center for Innovation, Incubation and Entrepreneurship
16. Chetna Gala Sinha, Founder, Mann Deshi Mahila
17. Madhu Sirohi, Head - CSR, Uninor
18. Dr. Jeemol Unni, Associate Professor, Gujarat Institute of Development Research
19. Dr. Sridhar Varadharajan, Research Fellow, Sasken Communication Technologies
20. Ninad Vengurlekar, Vice President, IL&FS ETS (New Media in Education)

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