

# Gender and Technology

## Advancement of Women in Rural India

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Presentation at:



September 29, 2010

*You can tell the condition of a nation by looking at the status of its women.*

- Jawaharlal Nehru, First Prime Minister of India

*Gender equality is more than a goal in itself. It is a precondition for meeting the challenge of reducing poverty, promoting sustainable development and building good governance.*

- Former U.N. Secretary General Kofi Annan





# July 15 Headlines in...

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**IT parks to be completed by  
September**



# Some Challenges Related to Women in Rural India

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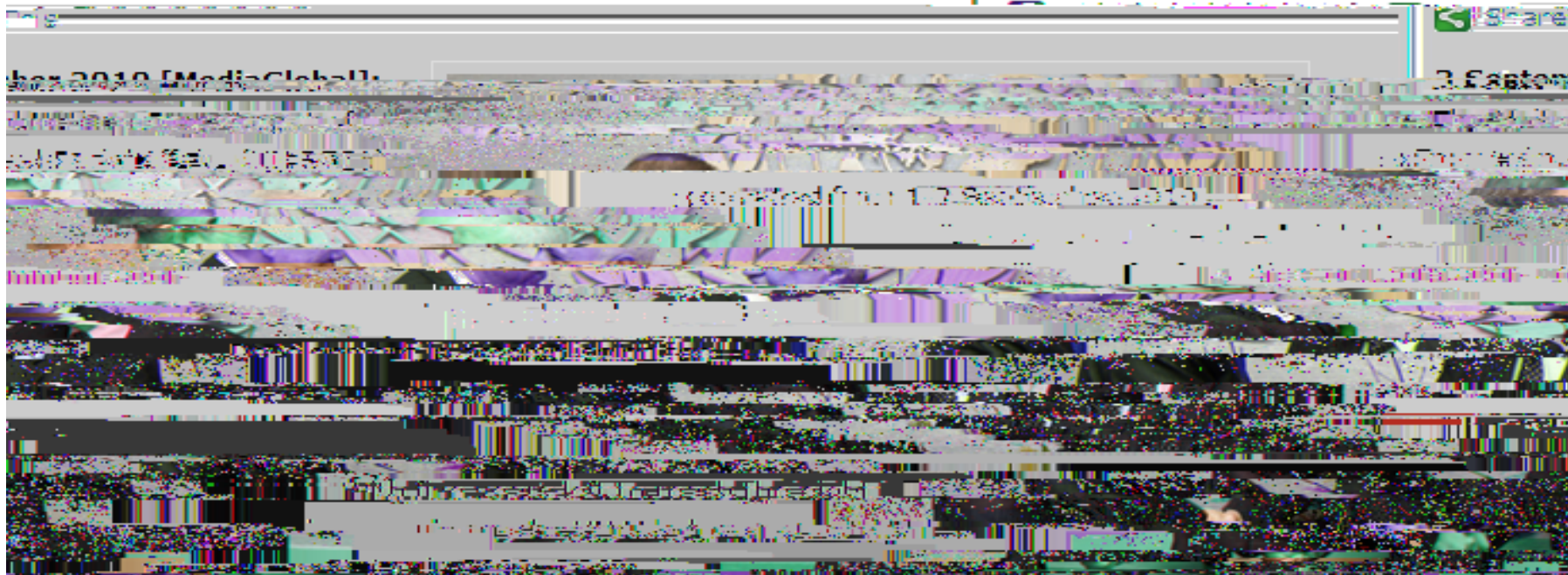
- ∅ Many jobs held by women have been displaced by technology, especially heavy machinery (now operated by men)
- ∅ High infant, child and maternal mortality rates
  - š Reasons: illiteracy, lack of knowledge, lack of medical care
- ∅





2015

By Eryn Bailey



Secretary-General Meets Chair of UN-GAID. (Photo Credit: UN Photo/Eskinder Debebe)

UN Secretary-General Ban Ki-moon announced that work of 66,000 for creation of a web program for universal literacy in 2015. UN announced its new plan Honorary Chair of 66,000, the plan for education and information technology will be...

approach to the... objectives... Secretary-General... in... will...

The chair, Tekle Abay-Ghezaheh, met with delegates from across the information and technology... contribute to... the... will...

# Technology Initiatives in India

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- ∅ Kiosks, cell phones, portals, etc. etc.
- ∅ At least 150 known Internet kiosk projects existed around 2004
- ∅



# Project

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**Initiative:  
800 villages in India**

**Research project:  
10 of those villages  
+  
10 adjacent villages**





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# Broad Objectives

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- Ø Fair pricing of agricultural commodities
  - š Reduce abuse of farmers and tradespersons
- Ø Education
  - š

Ø



# What Data Did We (Are We) Collect(ing)?

<b>Village chars (survey)</b>	<b>Individual/ household (survey)</b>	<b>Behavior (system logs)</b>	<b>Outcomes (archival)</b>
<ul style="list-style-type: none"><li>•Location</li><li>•Crops grown</li><li>•Demographic profile</li><li>•Governance modes</li></ul>	<ul style="list-style-type: none"><li>•Demographics</li><li>•Personality (e.g., Big-5)</li><li>•Culture variables</li><li>•Social networks (advice, friendship, hindrance) from men, women and children</li></ul>	<ul style="list-style-type: none"><li>•Use data—direct and proxy</li></ul>	<ul style="list-style-type: none"><li>•Income</li><li>•Crop information and agri-production (target and neighboring villages)</li><li>•Health-related variables</li></ul>



# Mortality Rates\*

Year	Control group (10 villages)	Intervention group (10 villages)
2002	73.1	73.5
2003	70.3	70.8
2004 (intervention)	68.4	68.5
2005	66.2	65.1
2006	64.1	61.8
2007	61.8	56.4
2008	59.4	52.2
2009	57.3	49.1

\* Coded as an index of infant, child and maternal mortality per 1000 live births (still-born data accuracy was low, thus excluded)

# Kiosk Use by Women

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Year	% of men using kiosks	% of women using kiosks
2004 (intervention)	19.5	4.8
2005	24.5	5.5
2006	28.2	6.9
2007	26.9	7.5
2008	28.1	8.2
2009	28.4	8.8



# Model

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# Predicting Medical Care: Level 0

	1	2	3	4	5
R <sup>2</sup>	.24	.29	.34	.35	.43
ΔR <sup>2</sup> (see note 2)		.05***	.10***	.10***	.08***
<i>Control variables:</i>					
Age	.17***	.15**	.13**	.13**	.13**
Marital status	-.12**	-.11**	-.08	-.08	-.08
Family size	-.03	-.02	-.02	-.02	-.02
# of children	.07	.05	.03	.03	.03
Education level	.15***	.13**	.11**	.07	.07
Mortalities in family	.15***	.15***	.13**	.11**	.11**
Knowledge	.17***	.12**	.13**	.13**	.13**
Need (pregnancy)	.25***	.20***	.20***	.16***	.15***
<i>Social network constructs (strong ties):</i>					
Eigenvector centrality		.17***		.12**	.07
<i>Social network constructs (weak ties):</i>					
Eigenvector centrality			.26***	.20***	.04
<i>Social network constructs (strong ties X weak ties):</i>					
Eigenvector centrality					.33***



# Predicting Medical Care: Multilevel

	1	2
R <sup>2</sup>	.28	.48
ΔR <sup>2</sup> (see note 2)		.20***
<i>Level-1</i>		
<i>Control variables:</i>		
Village population	-.05	-.03
Year	-.15***	-.12**
<i>Lead users:</i>		
% of lead weak-tie lead users		-.21***
<i>Level-0</i>		
<i>Control variables:</i>		
Age	.17***	.12**
Marital status	-.12**	-.07
Family size	-.03	-.02
# of children	.07	.03
Education level	.15***	.06
Mortalities in family	.15***	.11**
Knowledge	.17***	.13**
Need (pregnancy)	.25***	.14**
<i>Social network constructs (strong ties):</i>		
Eigenvector centrality		.06
<i>Social network constructs (weak ties):</i>		
Eigenvector centrality		.03
<i>Social network constructs (strong ties X weak ties):</i>		
Eigenvector centrality		.32***





# Predicting Mortality

	1	2
R <sup>2</sup>	.23	.39
ΔR <sup>2</sup> (see note 2)		.16 <sup>***</sup>
<i>Control variables:</i>		
Age	.14 <sup>**</sup>	.12 <sup>**</sup>
Marital status	-.12 <sup>**</sup>	-.11 <sup>**</sup>
Family size	-.07	-.02
# of children	.05	.02
Education level	-.16 <sup>***</sup>	.12 <sup>**</sup>
Mortalities in family	.13 <sup>**</sup>	.12 <sup>**</sup>
Knowledge	-.16 <sup>***</sup>	.14 <sup>**</sup>
Need (pregnancy)	.28 <sup>***</sup>	.23 <sup>***</sup>
<i>Medical care</i>		
Medical care (visits)		-.40 <sup>***</sup>



# What Reduces Mortality Rates?

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- ∅ As has been known for a while, medical care is crucial
- ∅ Strong ties are detrimental
- ∅ Weak ties are valuable
- ∅ Technology kiosks are helpful
- ∅ Lead users being more embedded via weak ties is helpful



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# Technology and Gender Differences: Lessons Learned from Developed Countries

	Low on Demographic variables			High on Demographic variables		
	Women	Men	Significance of difference	Women	Men	Significance of difference
<i>Age</i>						
Attitude	J J J	J J J	X	J	J J J	J J J
Social infl	J	J	X	J J J	X	J J
Beh'l control	J	J	X	J J	X	J
<i>Income</i>						
Attitude	J J J	J J J	J J	J J J	J J J	J J
Social infl	J J J	X	J J	J J J	X	J J
Beh'l control	J J J	X	J J	J J J	X	J J
<i>Education</i>						
Attitude	J J J	J J J	J J	J J J	J J J	J J
Social infl	J J J	X	J	J J	X	J
Beh'l control	J J J	X	J	J J	X	J
<i>Occupation</i>						
Attitude	J J J	J J J	J J	J J	J J J	J J J
Social infl	J J J	X	J J	J J J	X	J
Beh'l control	J J	X	J	J J J	X	J J

*Notes:*

1. Attitude: extent of liking to use the tech; Social influence: extent of peer pressure to use the tech; Behavioral control: extent to which internal and external factors are in place to facilitate techn use.
2. Significance of difference represents the significance of the interaction term (e.g., A X GENDER), and was also confirmed by test of beta differences across independent samples using Chow's test.



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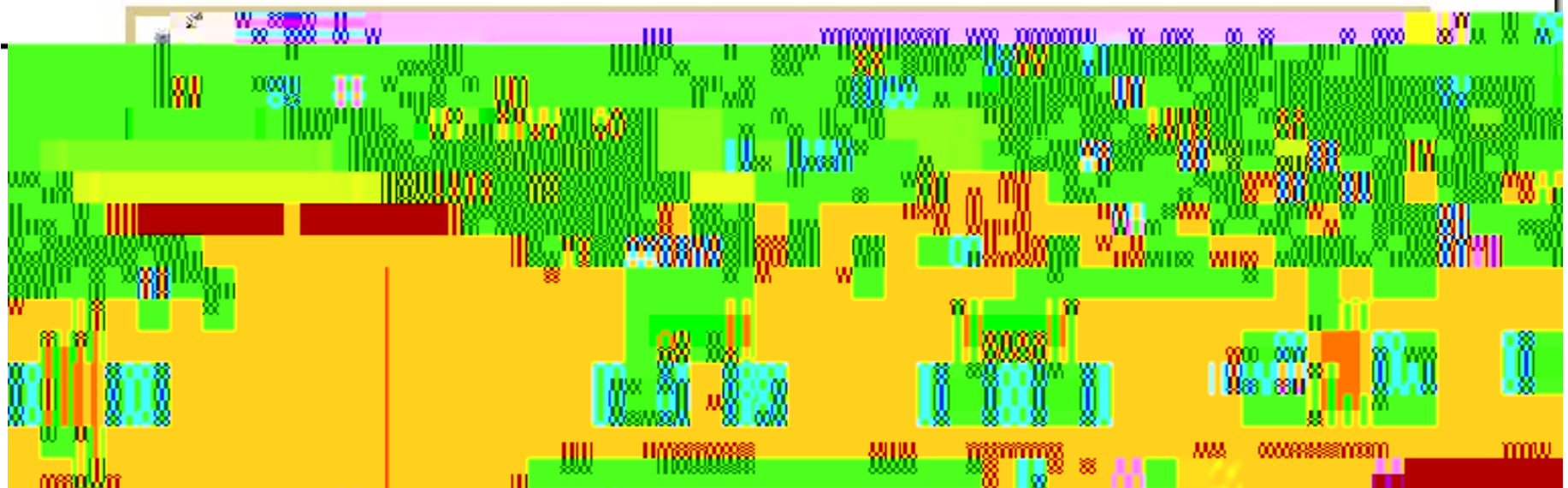
# Study Design and Data Collection Challenges

<b>Things We Cannot/Could Not Control</b>	<b>What We Tried to Do</b>
<ul style="list-style-type: none"><li>Ø India is culturally diverse</li><li>Ø Different crops grow in different parts of India</li><li>Ø Monsoons in India vary from year to year</li><li>Ø Different interviewers</li><li>Ø Different trainers</li><li>Ø Population growth in India</li></ul>	<ul style="list-style-type: none"><li>J Measure cultural chars</li><li>J Collect adjacent control group (village) data</li><li>J Collect adjacent control group (village) data</li><li>J Compare across interviewers</li><li>J Compare across trainers</li><li>J Nothing @</li></ul>









(a) a railway kiosk, (b) a staff member collects data from a microfinance client, (c) the same staff member makes a deposit at a local bank.

**Economic factors:** *... stated infrastructure investment as a broad, observed*...  
 Another Indian cultural trait Hofstede notes is a high *collectivism index*. This indicates a "high level of in-group cohesiveness that causes the individual to identify with the group." This can exist between social groups, *... over 1 billion people, 25 percent of the world's population*...  
**Cooperative**...  
 ... sometimes also display a diminished sense of personal community...



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