Why (and wherefore) *ICT's* for Development

Summer School on Computing for Socio-Economic Development

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Pop Quiz (from yesterday)

- What is development?

So our question is…. why/how/when apply ICT's as a tool towards such development….

Quick Definition Problem #2

- What are "information and communication technologies"?

Bill Gates Category Error

- Why should we give a poor family a computer when they need food? Why should we consider ICTs for development when there are so many more pressing problems?

As an entrepreneurial researcher in ICTD you need your *own* answer to Gates' question….

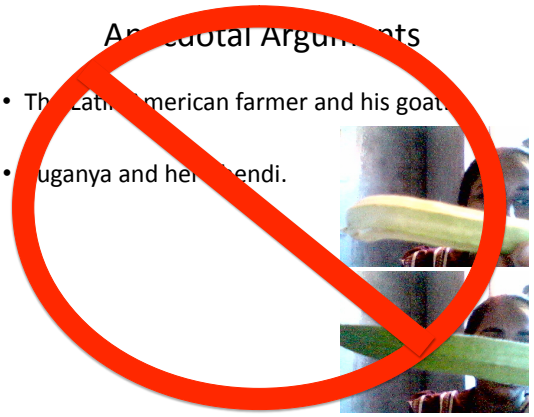
An Example Theoretical Argument

ICT's as tool in *economic* development among households or firms

- Improved communication is a main source of economic "progress" (Mill). Improved communication is central to the (coming) proletarian revolution (Marx).
- An important determinant of persistent poverty is a knowledge and communications gap (Stiglitz).
  - LDCs have "obstructed, incomplete and 'relatively dark' economic systems" with highly imperfect information and incomplete markets.
- We live in a knowledge or informational society (Castells).
- Modern ICTs are the best tools we have to enhance communication and close knowledge or informational gaps (who?).
- Mobile phones and the internet develop human freedoms and capabilities, "yes, yes, but" (Sen)

Anecdotal Arguments

- The Latin American farmer and his goat
- Buganya and her Mobendi.



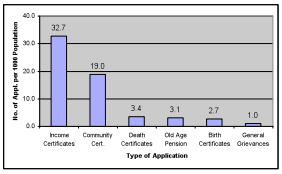
Empirical Examples

- Macroeconomic impact of use
  - There is a strong *correlation* between ICT penetration and use, on the one hand, and how it relates to a country's economic growth on the other; richer countries have higher rates of ICT use. A large number of studies have found a statistically and economically significant impact (*causation*) of telecoms rollout on growth (Forestier *et al.*, 2002; Waverman *et al.*, 2005).
  - Freund and Weinhold (2000) show that a 10 per cent increase in the number of internet host sites in a country is associated with a 1.7 percentage point boost in the country's exports to the United States.
  - In OECD countries, the evidence suggests that investments in computers and digital networks promotes growth. Current evidence in low-income countries remains scarcer, but there is no compelling reason to imagine that this investment is considerably less effective than in high-income settings.

Empirical Examples

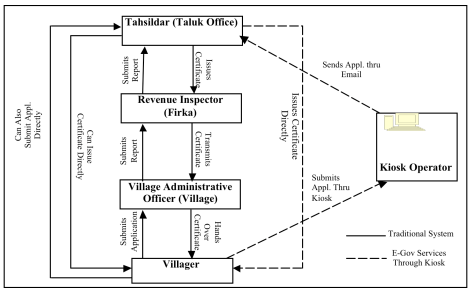
- Microeconomic impact of use
  - Rama Bijapurkar's qualitative work finds that mobile phones are *productivity tools* in Mumbai for the 'pimps and vegetable sellers' – small-scale entrepreneurs who need to connect with suppliers or search for work and customers.
  - The spread of mobile phone service allowed fishermen to land their catches where there were wholesalers ready to purchase them. This reduced waste from 5–8% of total catch to close to 0, increased average profitability by 8 per cent reduced consumer prices by 4% (Jensen, 2007).

Empirical Evidence: E-government and Consumer Surplus

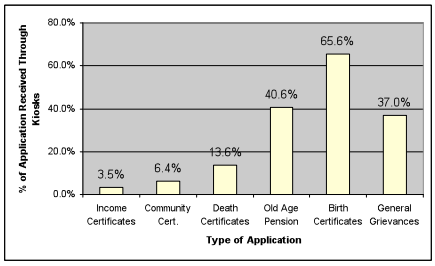


(with R. Kumar)

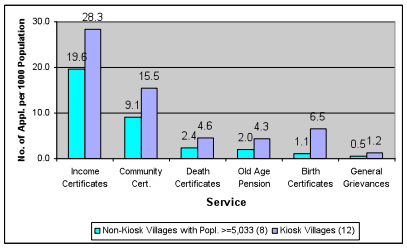
How did it work? E-gov Shift in Power/Delivery Mechanisms



Percentage of Total Applications Received From Kiosks



Applications in Big Villages: Kiosk vs Non-Kiosk



Political Liberties Model

By offering e-government services through a kiosk leads to an increase of 4.950 and 2.925 in the average number of applications (per 1000 population) received for birth certificates and old age pensions respectively, when compared to that when the village has no kiosk, keeping other factors constant.

Consumer Welfare Results

Government Service	Cost and time estimate *without* e-government	Cost and time estimate *with* e-government	Savings in Cost and time with e-government
Birth Certificates	Rs. 60 to 250, 3-7 days	Rs. 35, 2-3 days	Rs. 25 to 215, 1-4 days
Death Certificates	Rs. 60 to 250, 3-7 days	Rs. 35, 2-3 days	Rs. 25 to 215, 1-4 days
Old Age Pensions	Rs. 25, one day in visiting the Taluk office	Rs. 10, No visit required	Rs. 15, one day

ICTD: So where are we now?

ICT's as a tool for economic, social and political development:

- Theoretical arguments
- Anecdotes
- Empirical evidence

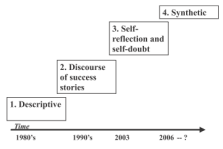
But we need more and better and…. this means we need to think about us as a community of scholars and practitioners.

Wilson & Best, *ITID, 3*(1), 2006

As our field evolves and grows we believe it has now entered a more healthy and balanced period of synthetic scholarship. The current period is marked by research writing and reflection that is:

- Founded in theory
- Sharing common concepts
- Grounded in empirical analysis
- Cumulative, comparative, and aware of lessons from the past
- Contextualized
- Cross-disciplinary
- Globally aware while locally engaged

With Volume 3 of ITID we intend to build on and extend this new, healthier phase and to ensure that it continues to grow in impact and importance.



Heeks, *IEEE Computer, 41*(6), 2008

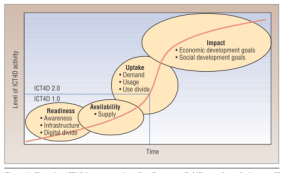


Figure 3. Changing ICT4D issues over time. Readiness, availability, and uptake issues will remain relevant for at least a generation, but they will fade alongside greater interest in impact.

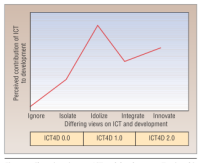
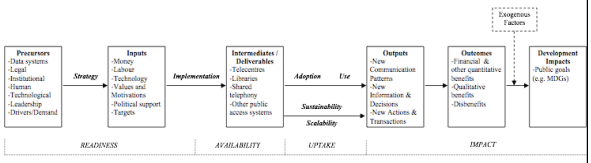


Figure 2. Changing views on ICT and development. Tracing this chronology of views about ICT and development can provide data for reinterpreting earlier chronologies.

Heeks 2.0 cont.



Araba Sey Literature Review (2009)

- 80 papers reviewed
- Formative (process) focus as against summative (impact) evaluations
- Anecdotal and not generalized/generalizable
- Conclusions often suggest projects underperforming, sustainability failures
- Limited use of theories, formal analytic framings
- Limited use of hypotheses testing or statistical analysis. Research design is weak. Mixed methods common.
- 80% case studies. A few comparative. India is most represented country.
- Some analytic frameworks and theoretical elements are emerging.

What Does This Mean For You: Towards Synthetic Scholarship

- Evidence vs. anecdote
- Methods (e.g. quantitative, qualitative, bench research, theory, policy)
- Theories (e.g. social embededness, diffusion of innovation, capabilities or livelihood framework)
- Formative vs. summative: readiness, availability, uptake, impact
- Sustainability and scalability

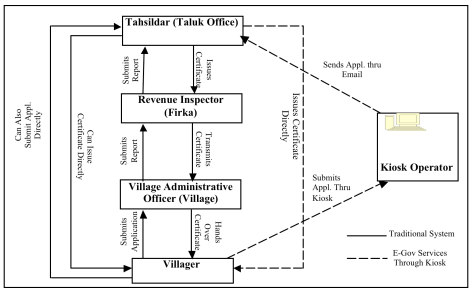
An ICTD Sustainability Framework

- Economic sustainability (Heeks)
- Social/Cultural sustainability (IDRC)
- Political/Institutional sustainability (IDRC)
- Technological sustainability (me)
- Environmental sustainability (everyone)

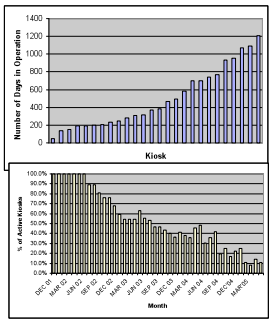
Sustainable Failure Modes

- Total failure: the initiative was never implemented, was implemented but immediately abandoned, or was implemented but achieved none of its goals.
- Largely unsuccessful: some goals were attained but most stakeholder groups did not attain their major goals and/or experienced significant undesirable outcomes.
- Partial success/partial failure: some major goals for the initiative were attained but some were not and/or there were some significant undesirable outcomes
- Largely successful: most stakeholder groups attained their major goals and did not experience significant undesirable outcomes.
- Total success: all stakeholder groups attained their major goals and did not experience significant undesirable outcomes.

Political Sustainability Failure



Financial and Institutional Sustainability Failure



- Financial Sustainability Failure
  - Institutional factor
  - Political factor
  - Technological factor
- Institutional Sustainability Failure
  - Cultural factor
  - Management factor

Multivariate Analysis of Sustainability Factors

Explanatory Variable	Dependent Variable: Duration the kiosks remained open (number of days)
Difference in the actual and the expected profits	0.022 (0.89)[a]
Different owner and operator	218.14* (1.94)[a]
Prior training of owner in computers	212.32* (1.75)
Gender of Operator	63.66 (0.71)
Support from n-Logue	326.60** (2.35)
Support from elected representatives	53.15 (0.29)
Constant	172.75* (1.93)
Observations	26
R^2	0.481
F-Statistic	4.30***

Failure Factors

- Financial Sustainability Failure
  - Lack of adequate technical support
  - Lack of voice telephony services
  - Lack of new relevant content/services
- Institutional Sustainability Failure
  - Termination of e-government services
  - Lack of sustained institutional partnerships for service delivery
  - Differential treatment by program managers

Heeks & Bhatnagar Factors

Critical Failure	Heeks & Bhatnagar "Factor"
Lack of institutional support	Management, cultural, and structural factors
Lack of technical support	Technical factor
Lack of institutional partnerships	Management, process, and strategic factors
Lack of new and relevant content	Information factors

What Does This Mean For You: Towards Synthetic Scholarship

ICTD must be(come) a *progressive* field!

Heeks: How Should I Publish?

Publication Type	*Mean Citations per Item*	*Median Citations per Item*	*% Items Never Cited*	*n*
Single Authored Book	96	48	0%	4
Refereed Journal Article (WoK-listed journal)	54	30	6%	17
Working Paper (available online)	27	8	22%	46
Refereed Journal Article (non-WoK-listed journal)	9	5	20%	15
Report / Handbook (available online)	6	3	29%	14
Book Chapter	9	0	55%	40
Magazine / Professional Journal Article	1.4	0	69%	80
Conference / Seminar Presentation	0.6	0	92%	98

My (biased) reading of this: Book to journal to conference paper.
But keep it all online all the time.

Which Conference?

Conference	Type	Average GS Citations Per Paper	Impact Score	Citation Score
IFIP WG9.4 2009	ICT4D Soc. Sci.	0.00	0.00	0.00
ICTD2009	ICT4D Multi	0.81	0.65	0.81
ICTD2007	ICT4D Multi	6.27	3.56	2.73
IFIP WG9.4 2007	ICT4D Soc. Sci.	1.26	0.21	0.43
CHI2007	Comp. Sci.	20.39	7.03	7.03
ICIS2006	Info. Systems	1.73	0.39	0.52
ICTD2006	ICT4D Multi	13.4	3.43	3.43
EADI2005	Devel. Studies	0.06	0.00	0.01
DSA2005 (ICT4D papers only; no link to conference)	Devel. Studies	1.00	0.06	0.22
IFIP WG9.4 2005	ICT4D Soc. Sci	1.07	0.07	0.22

Which Journal (citations)?

	Journal	2005 Score	2008 Score	Overall Score
1	Information Technologies and International Development	2.61	2.08	***2.35***
2	Electronic Journal of Information Systems in Developing Countries	3.62	1	***2.31***
3	Information Technology for Development	2.94	1.35	***2.15***
4	African Journal of Information and Communication	1.09	0.4	***0.75***
5	International Journal of Education and Development Using Information and Communication Technology	1.01	0.4	***0.71***
6	Asian Journal of Communication	1.16	0.23	***0.70***
7	Journal of Health Informatics in Developing Countries	n/a	0.43	***0.43***
8	Information Development	0.35	0.25	***0.30***
9	International Journal on Advances in ICT for Emerging Regions	n/a	0.26	***0.26***
10	African Journal of Information & Communication Technology	0.25	0.04	***0.15***
11	South African Journal of Information Management	0.28	0	***0.14***
12	African Journal of Information Systems	n/a	0.05	***0.05***
13	International Journal of Information Communication Technologies and Human Development	n/a	0.01	***0.01***
14	Asian Journal of Information Technology	0.01	0	***0.01***
15	Asian Journal of Information Management	n/a	0	***0.00***
-	International Journal of ICT Research and Development in Africa	n/a	n/a	***n/a***
	World Development	8.96	5.95	***7.46***
	Information Systems Journal	7.62	2.71	***5.16***
	Human-Computer Interaction	5.34	3.85	***4.60***
	The Information Society	5.98	3.10	***4.54***
	Journal of International Development	2.44	1.28	***1.86***

Which Journal (traffic/readers)?

Journal	*Alexa Traffic Rank*	*Sites Linking In*	*Online Since*
Electronic Journal of Information Systems in Developing Countries	1,422,355	120	2001
Information Technologies and International Development	4,527,166	35	2009
Electronic Journal of e-Government	1,785,669	72	2002
Electronic Journal of e-Learning	2,092,075	126	2002
Electronic Journal of Knowledge Management	2,286,374	96	2002
Journal of Community Informatics	4,535,331	129	2004

Building the Field

How can ICTD become a *progressive* research endeavourer? I believe there are at least four things we must do:

- Return to our inter-disciplinary and holistic roots and immerse ourselves in multiple literatures.
- Avoid the pitfalls of fetishistic techno-utopianism that, regardless of our rhetoric, is a far too common reality.
- Spend time on fundamental innovation and work; this means in particular to find *patient* money supporting multi-year initiatives.
- Develop a set of fundamental shared problems and appreciation for mixed (and when appropriate shared) methods. And make sure much of this focuses on robust evaluation and assessment.

And *branding*!

- What is your cocktail-party pitch?

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