Digital and other poverties: Exploring the connection in four East African Countries

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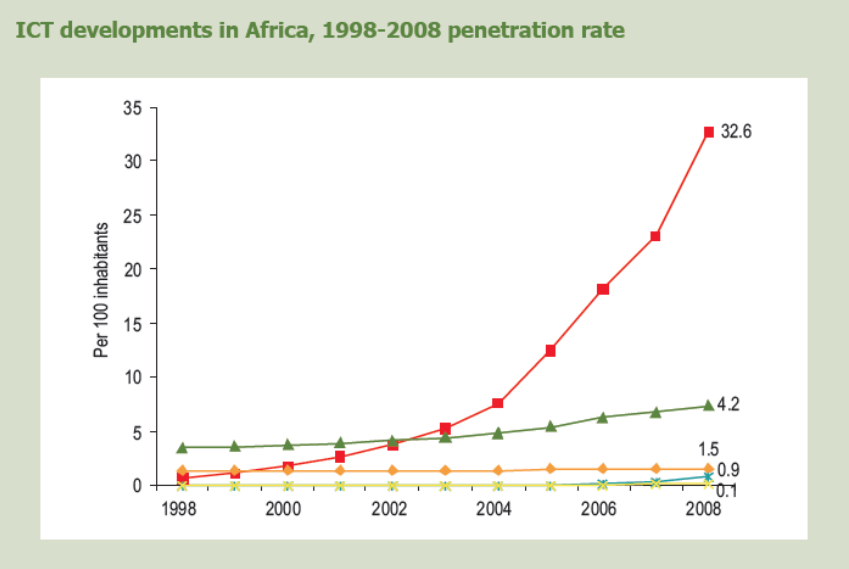
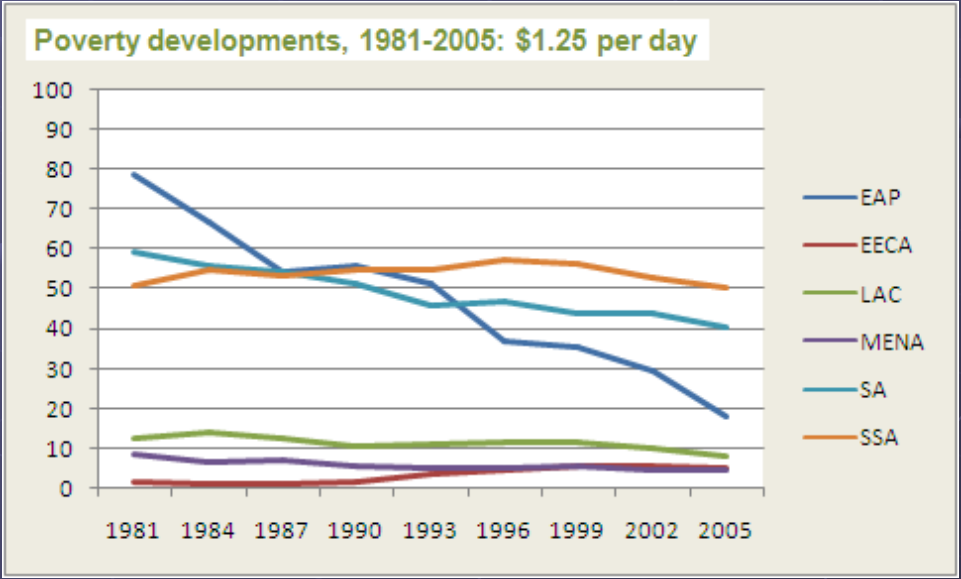
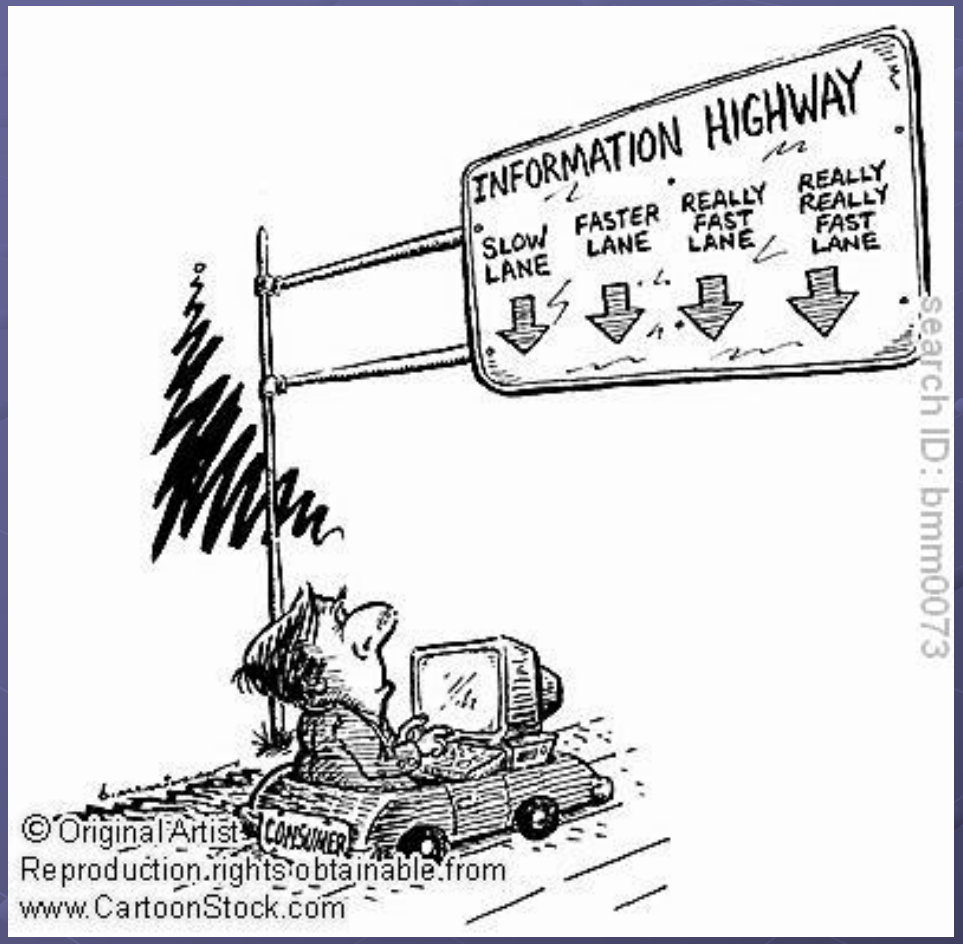
Progress on ICT and poverty



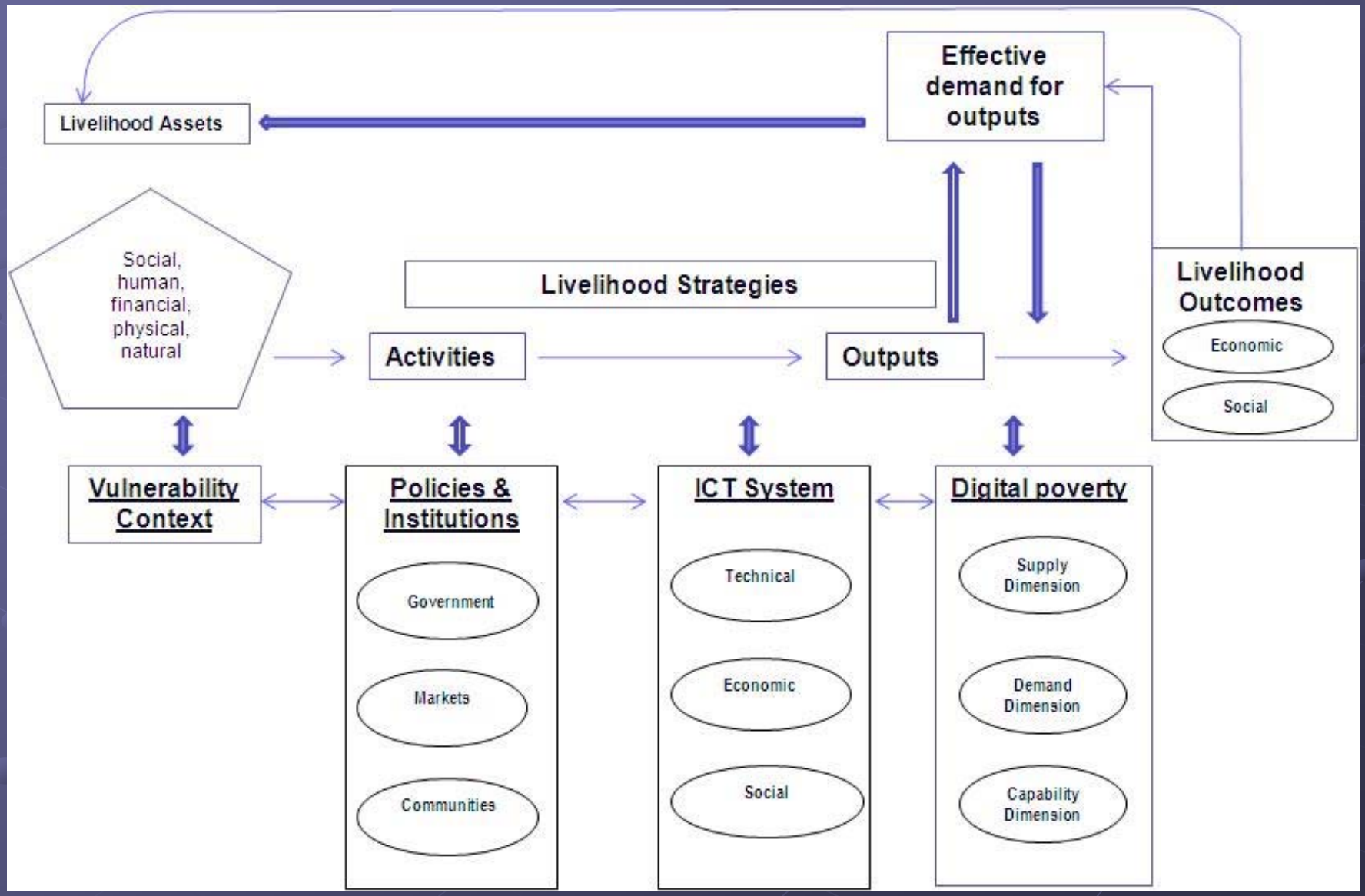


Digital dividend or digital divide?



I am hungry … if we had a computer we could have ordered food through a website …

Framework


Effective demand for outputs
Livelihood Assets
Social, human, financial, physical, natural
Livelihood Strategies
Activities
Outputs
Livelihood Outcomes
Economic
Social
Vulnerability Context
Policies & Institutions
Government
Markets
Communities
ICT System
Technical
Economic
Social
Digital poverty
Supply Dimension
Demand Dimension
Capability Dimension

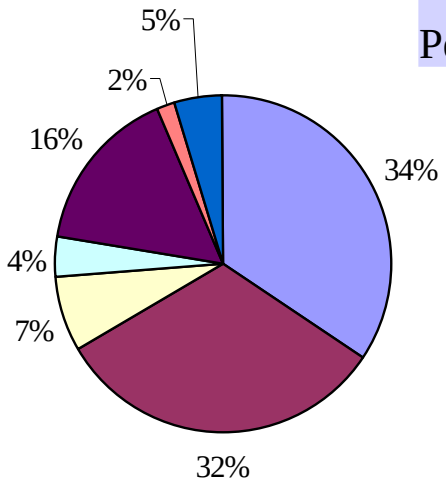
Methodology

- Questionnaire survey of 400 households in Kenya, Rwanda, Tanzania and Uganda who were interviewed in 2007/8 and are again being interviewed in 2010.
- Purposive selection of census Enumerator Areas as the primary sampling unit, within which randomly selected households formed the secondary sampling unit.
- In principle, the purposive selection was to be based on the identification of the 20 poorest EA's in each country using data collected by the national statistical offices.
- At the level of the household, the sample can reasonably be described as being representative of the poorest regions in the four countries.
- In principle one adult was to be randomly selected from the household roster to be interviewed about their ICT skills and usage. In practice, selection was frequently non-random and only those present at the time of the interview were included for selection.
- Analysis at this level cannot with certainty be said to be representative of adults in poor EAs nor of adults in the sample.

Indicators (2007 unless otherwise specified)	Kenya	Rwanda	Tanzania	Uganda
Population (in millions) (2005)	35.6	9.2	38.5	28.9.
Urban share of population (%) (2005)	22.2	18.9	26.4	13.3
HIV prevalence (% 16-49 years)	7.1	2.8	5.4	6.7
Human Development Index (HDI)	0.541	0.460	0.530	0.514
Adult literacy rate (% ages 15 & above)	73.6	64.9%	72.3%	73.6%
GDP per capita (PPP US$)	$1,542	$866	$1,208	$1,059
Human Poverty Index-1 (HPI-1	29.5	32.9	30.0	28.8
Access to electricity (%)	14.0%	3.5%	11.0%	15.0%
Poverty levels (<$1 per capita/day)	22.8%	60.3%	52.8%	n.a
Poverty levels (national poverty lines)	52.0%	56.9%	35.7%	37.7%
Gini coefficient	47.7	46.7	34.6	42.6
Ibrahim Governance Index	53.7	48.5	59.2	53.6
Fixed lines (/1000)	7	2	4	5
Mobiles (/1000)	302	65	206	136
Hhds with computer (/1000)	55	3	23	51
Hhds with internet (/1000)	22	1	6	1
Internet users (/1000)	123	21	10	36
ICT Development Index (IDI)	1.62	1.17	1.13	1.21
IDI Rank (of 154 countries)	116	143	145	140
IDI change (’02-’07)	33.9%	18.2%	17.7%	31.5%

Urban

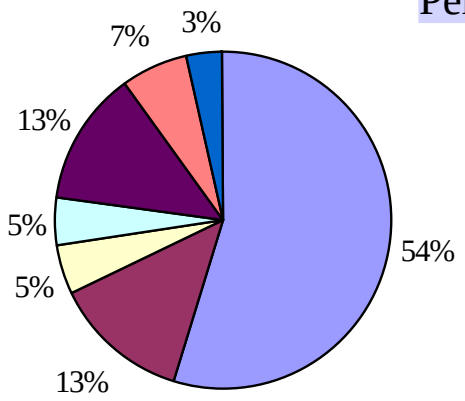
Total exp	$1,127
Per capita exp	$201



- Food
- Groceries
- Transport
- Appliances
- Services
- Major Items
- ICT

Rural

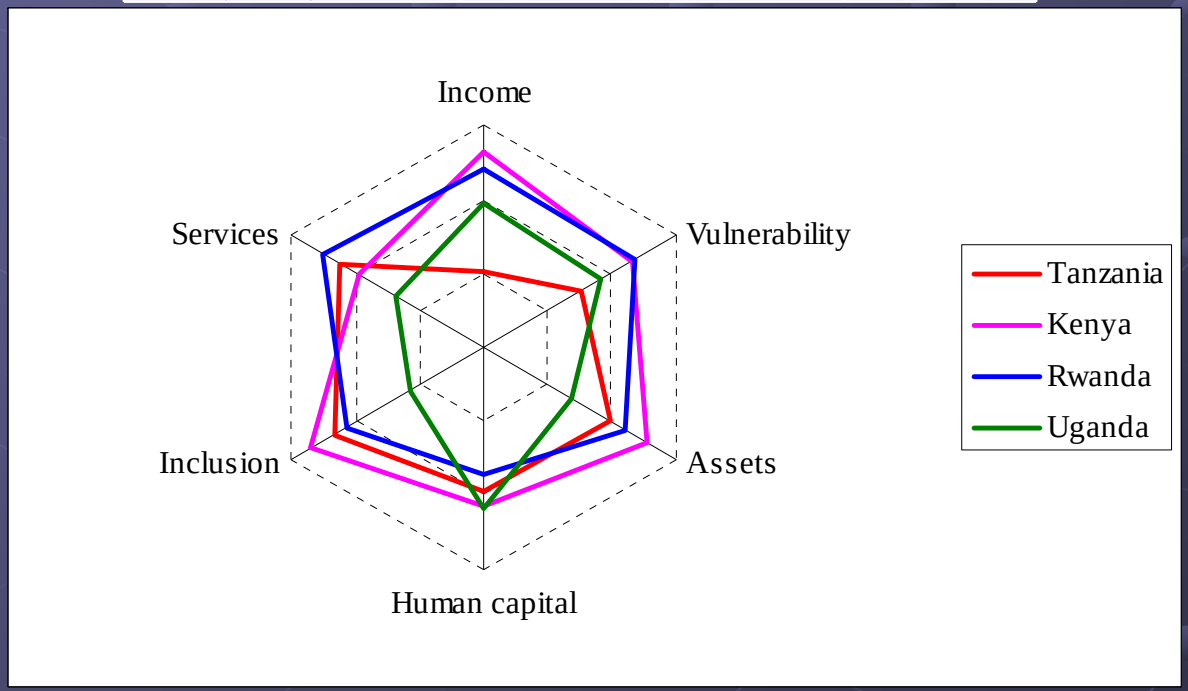
Total exp	$476
Per capita exp	$119

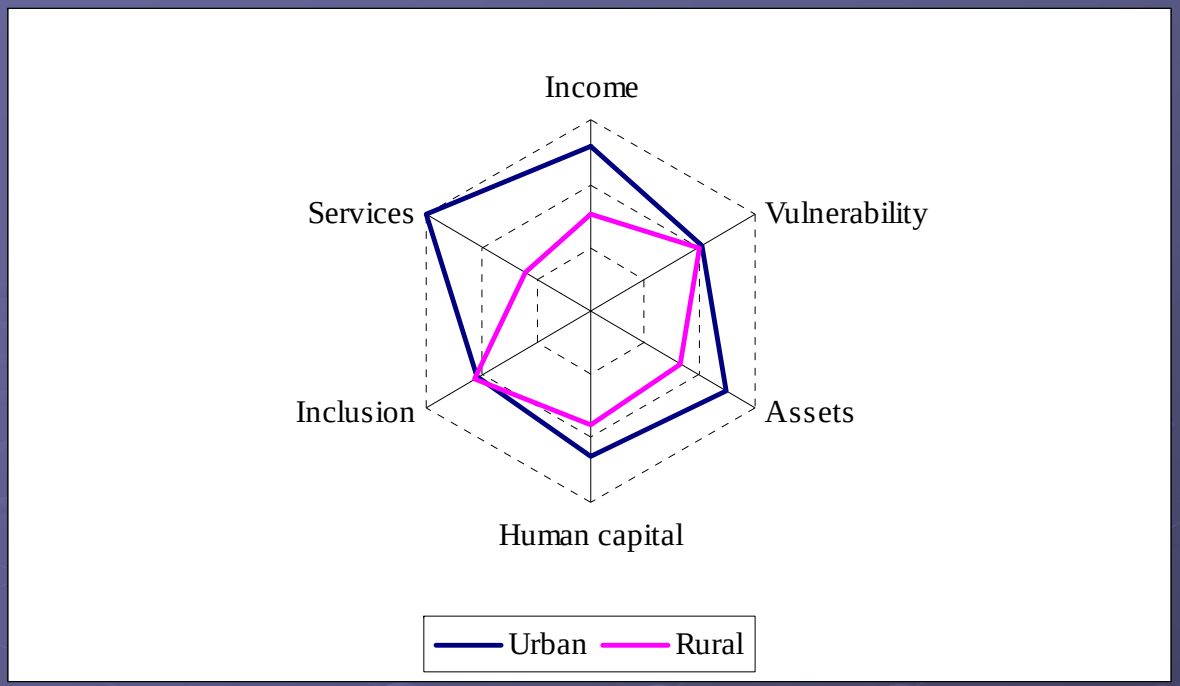


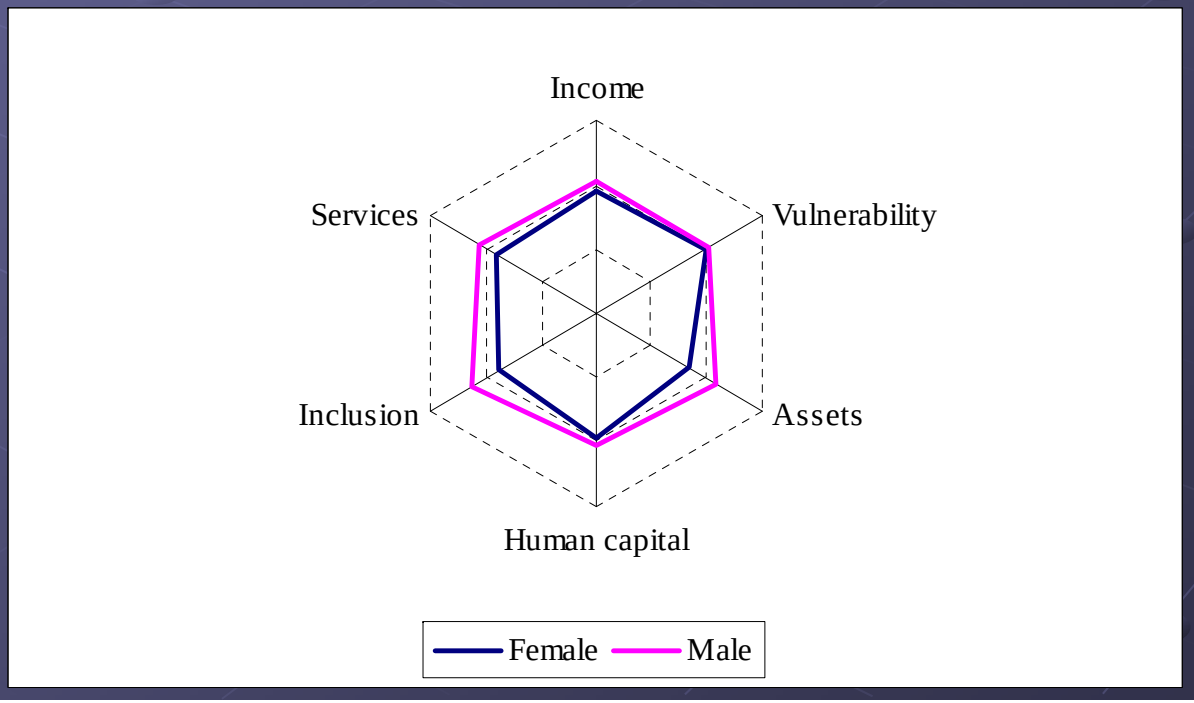
- Food
- Groceries
- Transport
- Appliances
- Services
- Major Items
- ICT

	P^0	P^1	P^2
Tanzania	0.65	0.28	0.16
Kenya	0.27	0.08	0.04
Rwanda	0.39	0.18	0.11
Uganda	0.41	0.16	0.09
All	0.43	0.18	0.1

Indicator	Not poor	Poor	All
Services (#)	2.79	1.41	2.19
Vulnerability (#)	1.32	1.21	1.27
Human capital (yrs of education)	7.80	5.70	6.89
Inclusion (#) plus participation	0.62	0.79	0.72
Income (multiples of poverty line)	3.08	0.59	2.00
Assets (#)	3.17	1.95	2.64
PCE (PPP$)	240.49	45.72	155.99

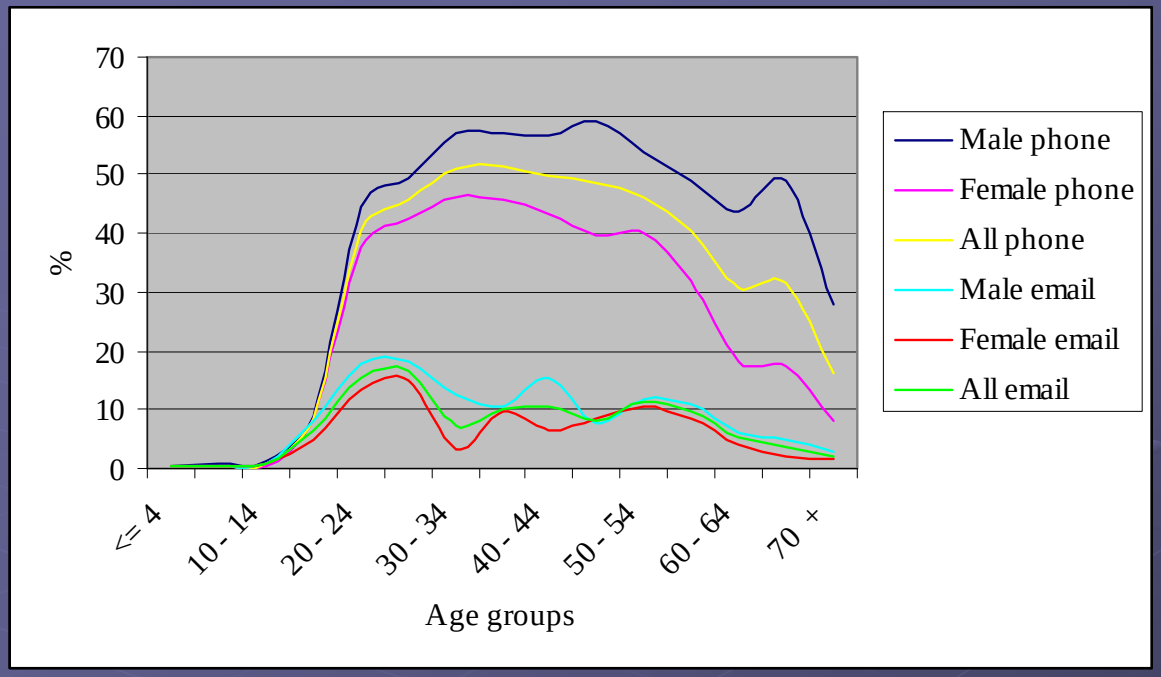


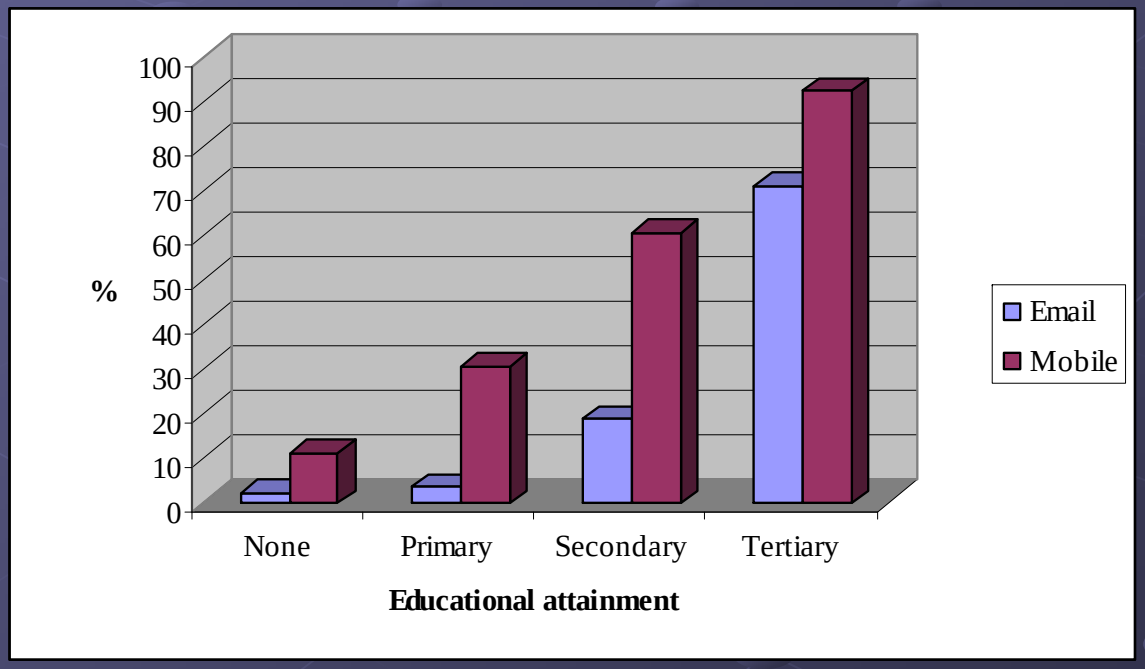

Income
Vulnerability
Assets
Human capital
Inclusion
Services
Urban
Rural

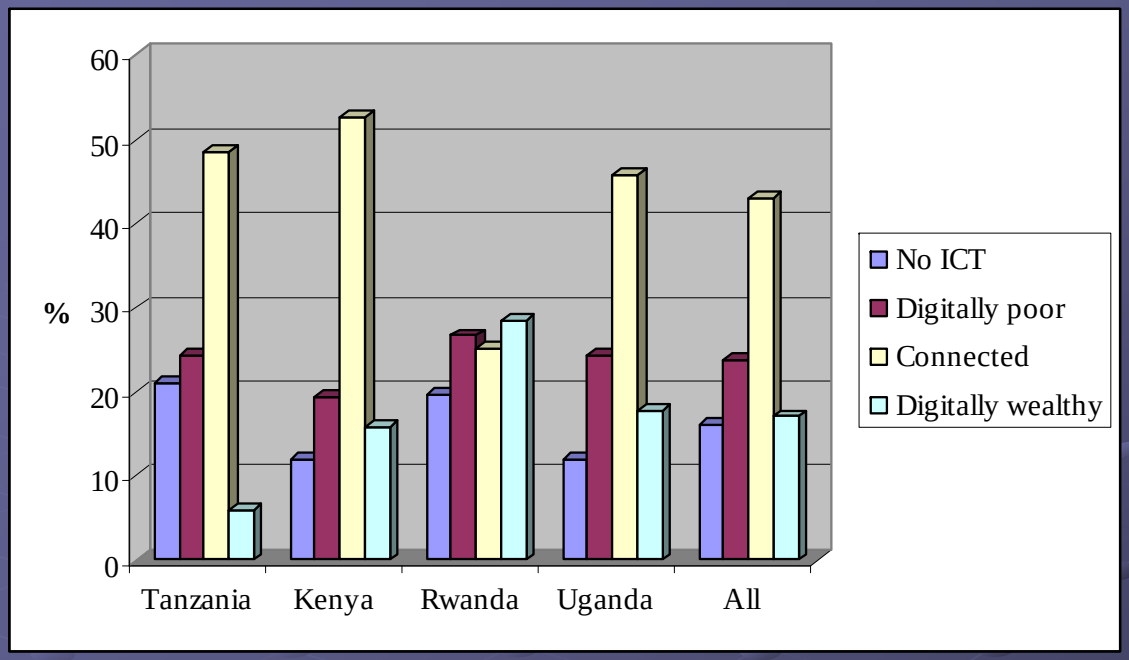

Income
Vulnerability
Assets
Human capital
Inclusion
Services
Female
Male

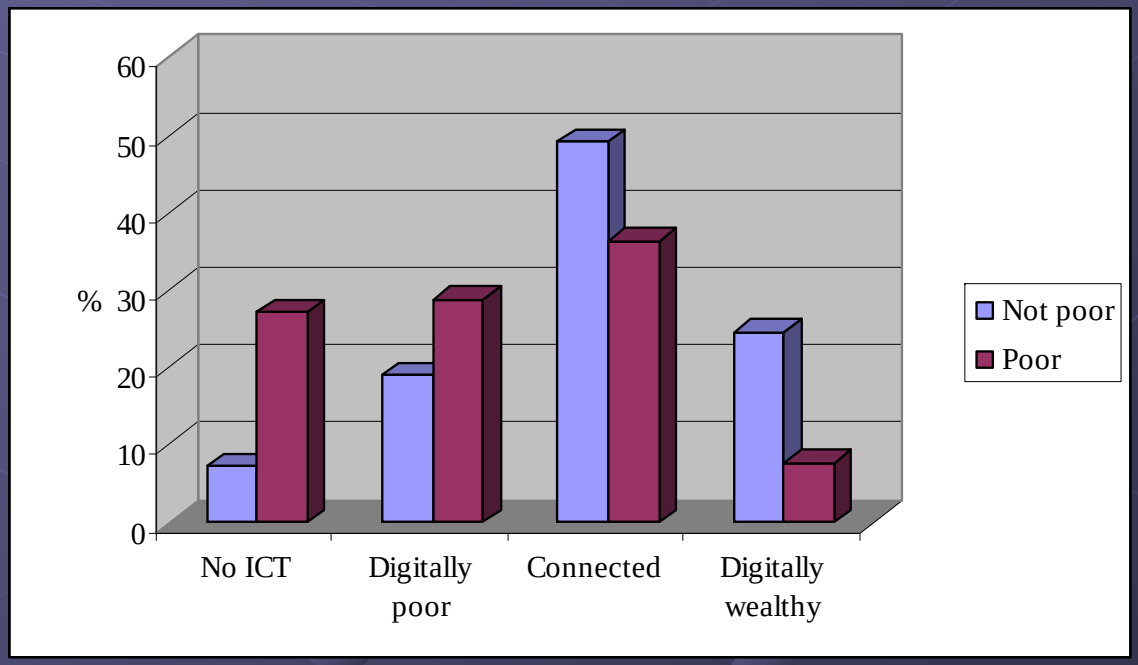
Access to ICT

ICT	Tanzania	Kenya	Rwanda	Uganda	All
Radio	66.7	79.3	72.8	61.1	70.0
TV	23.7	39.3	23.5	9.8	24.1
VCR/DVD	12.0	19.8	16.9	4.5	13.3
Land line	1.8	0.5	3.2	1.0	1.6
Computer	1.8	1.8	9.1	1.3	3.5
Internet connection	0.3	0.8	2.2	0.0	0.8
Email address	5.1	16.8	29.2	18.6	17.3
Mobile phone	54.2	67.9	55.8	64.9	60.7
Any ICT	70.2	81.0	73.5	61.3	71.5

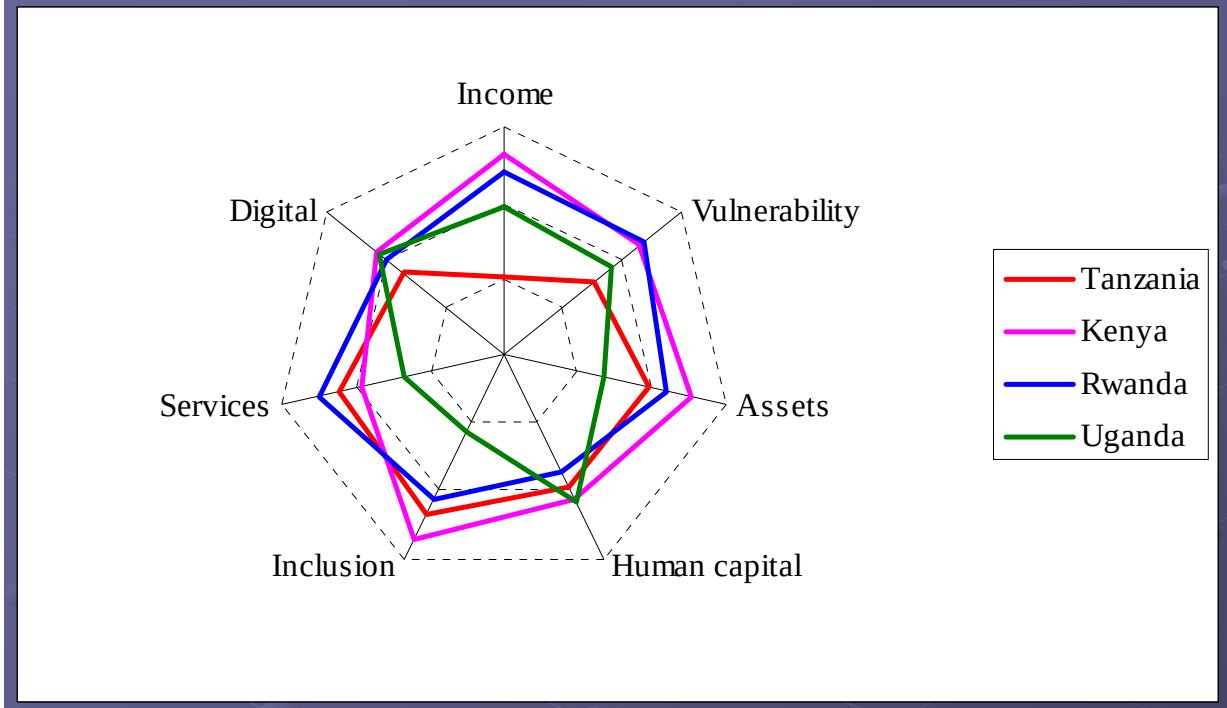

70
60
50
40
30
20
10
0
%
<= 4
10 - 14
20 - 24
30 - 34
40 - 44
50 - 54
60 - 64
70 +
Age groups
Male phone
Female phone
All phone
Male email
Female email
All email


100
90
80
70
60
50
40
30
20
10
0
%
None
Primary
Secondary
Tertiary
Educational attainment
Email
Mobile


60
50
40
%
30
20
10
0
Tanzania
Kenya
Rwanda
Uganda
All
No ICT
Digitally poor
Connected
Digitally wealthy


60
50
40
%
30
20
10
0
No ICT
Digitally poor
Connected
Digitally wealthy
Not poor
Poor

Digital and other poverties



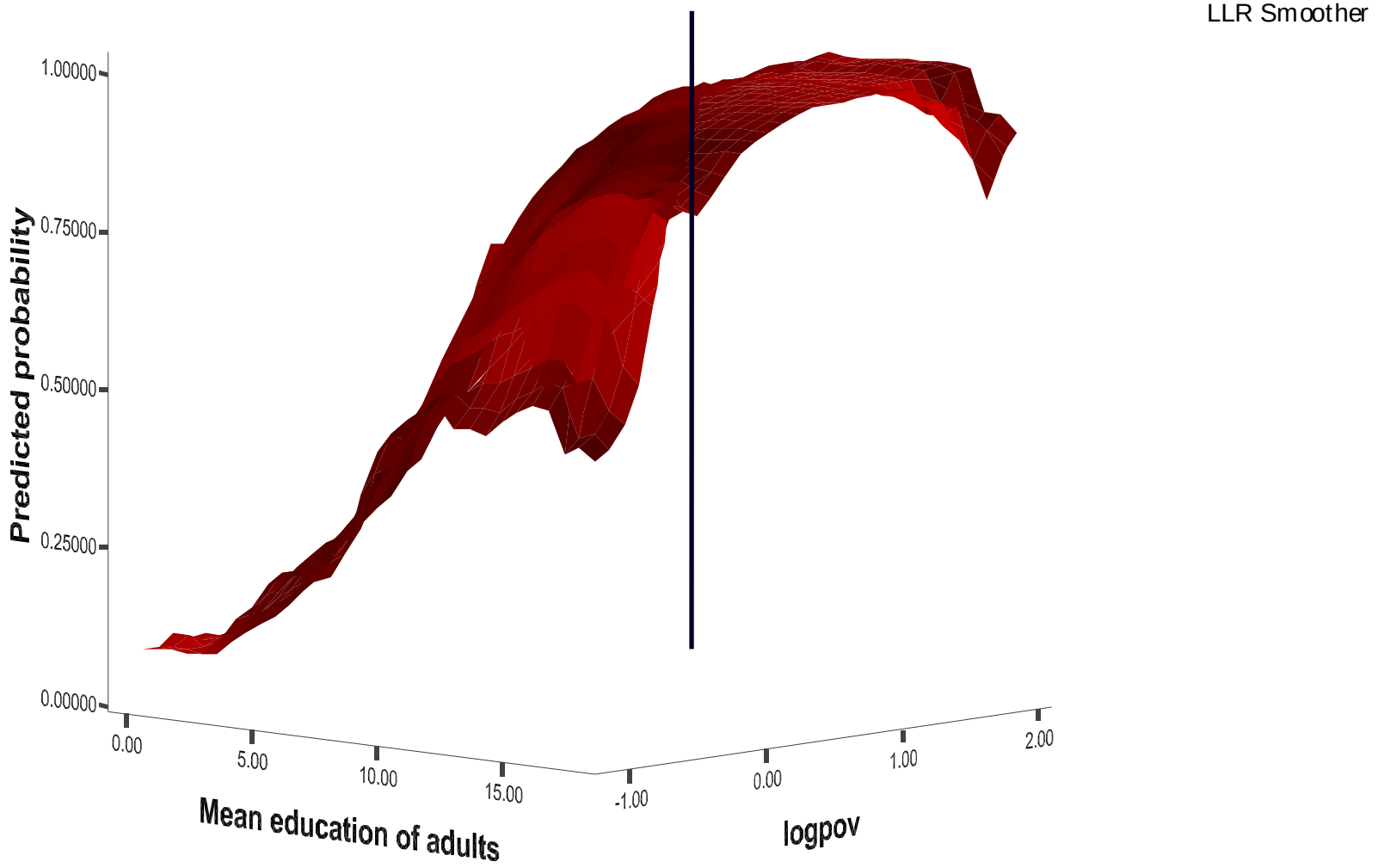
Predicting access to ICT

Households

Predictors	B	Wald	Sig.	Odds ratio
Income	0.913	16.986	**	2.492
Services	0.246	19.968	**	1.278
Human capital	0.291	176.189	**	1.338
Assets	0.599	8.358	**	1.820
Inclusion	0.130	1.656		1.139
Vulnerability	-0.170	7.160	**	0.843
Rural	-0.568	12.621	**	0.567
country		8.782	**	
country(1)	-0.444	4.647	**	0.642
country(2)	0.094	0.220		1.098
country(3)	-0.394	3.604	*	0.674
Constant	-1.440	31.194	**	0.237

Individuals

Predictors	B	Wald	Sig.	Odds ratio
Age	0.018	36.851	**	1.018
Sex	-0.376	17.937	**	1.457
Individual income	0.004	131.655	**	1.004
Household Income	1.193	51.332	**	3.297
Services	0.160	18.948	**	1.173
Ind. human capital	0.166	175.007	**	1.180
Assets	0.281	14.472	**	1.324
Inclusion	0.103	3.593	*	1.109
Vulnerability	-0.120	7.327	**	0.887
Sex of head	-0.228	5.055	**	0.796
Rural	-0.304	6.989	**	0.738
country		2.957	**	
country(1)	-0.084	0.500		0.920
country(2)	0.146	1.431		1.157
Constant	-3.387	239.657	**	0.034


LLR Smoother
Predicted probability
1.00000
0.75000
0.50000
0.25000
0.00000
0.00
5.00
10.00
15.00
Mean education of adults
-1.00
0.00
1.00
2.00
logpov

Conclusion

- This preliminary analysis depicts multi-dimensional poverty using scales for each of the five dimensions of poverty of interest to PICTURE
- Households without ICT are poorer in all dimensions than those with ICT, particularly in respect of education, services and economic assets.
- When only households below an income poverty line are considered, these gaps disappear, leaving only education as the major difference between those with ICT and those without.
- A multivariate analysis confirms the importance of formal education and suggests that there is also an interaction between education and income, and that this enhances ICT access.
- The determinants of individual access to ICT are similar, although there is a clearer gendered distribution of ICT access, with women 1.5 times less likely than men to have a mobile phone or email address, controlling for income and education.
- Further investigating the ICT/poverty nexus using PICTURE will require a more detailed exploration as to how education improves ICT access other than through its impact on the income generating ability of household members, and moving beyond access to explore the determinants of usage.