

INVESTIGATING PERCEPTION OF THE ROLE OF ICT TOWARDS THE QUALITY OF LIFE OF PEOPLE IN RURAL COMMUNITIES IN UGANDA

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Abstract: The role of Information and Communication Technology (ICT) in enabling various development goals and ultimately human development is no longer disputed. As such, efforts are evolving from just increasing availability and access, to addressing aspects of sustainability and impact of ICT with the aim of optimizing ICT benefits on the Quality of Life (QoL) of people in developing countries. This paper reports a study that applied Sen's Capability Approach to investigate people's perception of the opportunities ICT can offer towards their QoL vis-à-vis the actual achievements. It establishes that while people value a range of mostly social aspects that ICT enables, only a few are exploited. This predominant ICT uses for social interaction and pleasure suggest that people lack awareness of the full potential of ICT towards their QoL. It is therefore the obligation of the state and policy makers to adopt a pluralistic approach to ICT provision, one that does not only focus on availability and affordability, but also considers expanding people's awareness and agency for development benefit.

Keywords: quality of life, Sen's Capability Approach, Information and Communication Technology for development (ICT4D), rural communities, Uganda, ICT contribution

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1. INTRODUCTION

Development as the ultimate goal for Information and Communication Technology for development (ICT4D) undertakings has been variously conceptualized: from economic growth to modernization and, most recently, from a people-centered or human development perspective (Forestier et al. 2002; Prakash and De' 2007). The human development approach is increasingly taking precedence over the other approaches owing to its multidimensional nature and concern for the “who” and “how” in the development process. For example, while economic growth at both macro and micro level is an influential and significant proxy for human development; it only provides a one-dimensional, money-metric perspective of quality of life (QoL). Additionally economic growth comes forth as only an essential means rather than a goal to human development (Gasper 2002). Also, while modernization posits that development is the life experienced by individuals in developed countries and what developing countries should emulate (Peet and Hartwick 1999), human development considers the influence of contextual factors such as social, political as well as cultural conditions and values in the achievement of a good life.

One of the influential approaches to conceptualizing human development is Amartya Sen's Capability Approach (SCA) which insists on constructing “development as freedom”. Development in this case is when people have more freedom (opportunities) to live the lives they value and a good life is one of freedom from such things as poverty, political oppressions and inequalities (Sen 1985). From this perspective, freedom is central to the investigation of development both as an ultimate end and a principal means with intrinsic and instrumental value respectively (Sen 2000). As an end, development is not only the rise in income or technology advancement for example the possession of a mobile phone but what the phone enables one to do, the opportunities it provides for the owner to meet personal goals and values. Development as an end refers to the substantive freedoms or the intrinsic, individual capabilities/opportunities that people value, which the resource makes available for people to exploit. It includes aspects such as self-esteem, obtaining an education, being healthy etc¹. This development aspect also emphasizes “agency” which refers to the “freedom to set and pursue one's own goals and interests” (Zheng 2007 pp 4). Accordingly freedom-oriented development highlights the need for development recipients to participate as agents rather than passive recipients in the development process. In addition freedom as a means has instrumental value that contributes to the realization of the substantive freedoms (Sen 2000). These instrumental freedoms are external to people's substantive freedoms and are the different kinds of

¹ In accordance with SCA once achieved, these capabilities are referred to as ‘achieved functionings’.

rights, opportunities and entitlements; which according to Sen (2000) these include: social opportunities, economic facilities, political freedoms, transparency guarantees and protective security. In addition to their contribution to people's substantive freedoms the strength in the instrumental freedoms lies in their complementary nature towards the attainment of a good life. Therefore any definition of a good life – life's opportunities comprises both the means and ends to development in terms of substantive and instrumental freedoms respectively. The attainment of such a life (achieved functionings) is further influenced by human diversity in terms of personal, social and environmental conversion factors. Evidently a capability (or freedom) oriented perspective motivates a people-centered approach to development in terms of quality of life (QoL), explicitly and implicitly considering issues of empowerment, sustainability and impact which are major concerns in the current ICT4D practice and research (Heeks 2008).

In practice, the focus on opportunities is especially vital for policy as it emphasizes a range of possibilities, revealing the gap between what is perceived as important and what is actually achieved. As Alampay (2006) points out in relation to ICT, opportunities comprising both achieved and unrealized functionings are evidence for ICT services required in the rural communities with the potential to influence policy on service provision in these communities. Gasper (2002) further reiterates that prioritizing freedom in terms of capabilities is a 'policy principle'. Moreover, Robeyns and van der Veen (2007) point out that policymakers are mandated to provide real options for quality of life even though they cannot decide how people live their lives. Furthermore despite the fact that quite a number of QoL investigations have been made from an economic and materialistic perspective, just a few approaches adopt a broad, systematic inquiry into life values as perceived by people in rural communities (Arku et al. 2008), especially in relation to ICT. This is somewhat surprising since people in the developing country context have similar social, emotional and psychological needs as people in the developed countries. Needless to say, even from a materialistic perspective, these general values are of very high importance and vital inputs in development plans.

A growing body of ICT4D research is applying a capability perspective to aspects such as social exclusion or the digital divide (Zheng and Walsham 2008), and evaluating the developmental impact of specific ICT applications e.g. e-government (Madon 2004; Alexander and Phahlamohlaka 2006; De' 2006). The application of SCA to the existing research is of various forms: for example defining capabilities as the capacity or ability to use ICT (Garnham 1997; Alampay 2006), surveying the contention between ICT4D projects as either welfare or agency-based approaches to development (Ratan and Bailur 2007), investigating exclusion as capability rather than resource deprivation (Zheng and Walsham 2008). Zheng's (2007) and Johnstone's (2007) applications of SCA are more generic providing illustrations for its most appropriate use in e-development and computer ethics respectively. It is noteworthy that majority of these studies were carried out in Asia (India, China and the Philippines), while the application of SCA in research in Sub Saharan Africa is still emergent.

Against this background, this paper reports a study that adapted SCA as an analytical framework in developing an understanding of how individuals in rural communities in Uganda perceived the importance of ICT towards their QoL; and how this perception influences ICT adoption. The overarching argument is that ICT benefits for the QoL of the rural poor are embedded within a complex ICT-QoL relationship. Presumably this

complexity accounts for the limited uptake or failure of ICT initiatives in this context, which are in most cases limited to the acquisition of technology. It is therefore posited here that a QoL perception from a capability perspective, relating personal needs as well as values and aspirations to ICT resources facilitates the understanding of this complex relationship. This in turn influences the adoption and use of ICT within a given context. The study defines quality of life in terms of SCA's capabilities construct as the opportunities (freedoms) that facilitate people to live a life they value within a specific context. It is however important to point out that this paper is limited to what the rural poor perceive as the importance of ICT towards their QoL (i.e. the opportunities and achievements they can derive) and does not extensively consider how this perception vis-à-vis the contextual factors influences adoption.

Section two adapts features of SCA and QoL principles to develop the theoretical definition of the dimensions and indicators adopted for the study. Sections three and four discuss the methodology employed and the subsequent findings respectively, while section five provides a detailed discussion of these findings, limitations to the study and suggestions for future works. Section six concludes this paper by presenting the contributions of this work and their implication to ICT4D practice aiming to ensure that ICT optimally benefits individuals in rural communities in developing countries.

2. QUALITY OF LIFE DIMENSIONS AND INDICATORS

The QoL definition proposed in this study is one that focuses on opportunities as comprising both substantive and instrumental freedoms. While Sen points out the distinctive nature of these two freedoms, he also recognizes that for an inclusive understanding of the connection between development and freedom, there is need to consider both aspects. From Sen's viewpoint, "[t]he intrinsic importance of human freedom, in general, as the preeminent objective of development is strongly supplemented by the instrumental effectiveness of freedoms of particular kinds to promote freedoms of other kinds (Sen 2000 pp xii)." Furthermore some freedoms are of both intrinsic and instrumental value. For example while healthcare and education are social opportunities that require policy action, they are also constitutive of one's personal freedom. The rationale is that the major goal for any development initiative is to increase people's freedoms. In effect the initiative should be assessed on its ability to increase people's internal capacities such as self-esteem, and the external opportunities which contribute and guarantee people's substantive freedoms. In support of this approach Alkire (2008) further points out that in choosing dimensions based on the capability approach, it is important that considerations of both instrumental effectiveness and resultant outcomes are considered. This way focus is not only limited to the outcomes, but also the process of development which is the channel through which policy action influence the outcomes. For instance Alkire (2005) illustrates that a small scale development initiative targeting people living with AIDS in South Africa increased individual freedoms such as earning an income, friendship and group support. This initiative also indirectly expanded these abilities through influence on instrumental freedoms such as capacity to access high-value markets, ability to keep accounts etc. Furthermore, in identifying QoL indicators Clark (2003) established that participants in

South Africa equally valued economic and social resources such as access to an income or healthcare as much as they valued a good family.

Similarly in analyzing the ICT and QoL relationship, SCA enables a direct analysis of the influence of ICT on people's substantive freedoms; and its indirect influence through the instrumental value of ICT to realizing substantive freedoms. In relation to ICT, Johnstone (2007) points out that ICT can directly enhance such individual capabilities like interaction and expression; or indirectly enhance opportunities such as education delivery (e-learning) and political participation (e-government) which in turn expand people's capabilities.

In an effort to provide a holistic picture regarding the role of ICT towards the QoL of people in rural communities a developing country context the study adopts three QoL dimensions synthesized from Sen's propositions of five instrumental freedoms in an earlier study (Kivunike et al. 2008); these are social opportunities, economic facilities and political freedoms. According to Sen (1999 pp. 38-39) social opportunities refers to arrangements society makes available to enable an individual to live a better life; economic facilities refer to the opportunities that individuals enjoy to utilize resources for the purpose of consumption, production, or exchange; and political freedoms refer to opportunities people have to exercise their political rights. The motivation for choosing three of the five freedoms was based on their interrelated nature. In effect protective securities and transparency guarantees are inherent within the chosen dimensions and are therefore assimilated as such in this paper. For example, transparency or trust is exhibited when citizens can freely exercise their political freedom, or the existence of non-bureaucratic processes in conducting financial transactions and accessing social services like education and health. Similarly, protective securities infer that a citizen is secure if they can easily contact authorities or relatives in case of disaster, natural or otherwise. Protective security further implies that people have access to economic resources and jobs to sustain their livelihoods. It is argued here therefore, that an individual's QoL is well represented by both intrinsic and instrumental social, economic and political opportunities that people value.

From a pragmatic perspective, the social, economic and political dimensions are rather generic requiring further breakdown in terms of indicators to facilitate an empirical investigation. In this respect quality of life literature has extensively surveyed and proposed indicators that suggest a good life (cf. Felce and Perry 1995; Hagerty et al. 2001; Clark 2003). Kivunike et al. (2008) proposed a list of indicators derived from two such studies: 1) Narayan et al's (2000) - an empirical study that established how people in 23 developing countries perceived a good life; and 2) Schalock (2004) – an expert review of QoL studies in various disciplines published between 1976 and 2004. The purpose of the synthesis was to capture both a context-specific and broad perspective of what made life worth living. It is posited that the combination of these two studies addresses this need since it considers a QoL perception from a developing country context as well as a multi-disciplinary perspective. As presented in Table 1, social opportunities dimension comprises QoL aspects of personal development, physical, social and emotional well-being; economic facilities dimension caters for material well-being and political freedoms cater for people's rights and security.

Effectively the proposed indicators provide a level of granularity relevant for an empirical investigation. However they require adaptation from a CA perspective to reflect

the influence of ICT in terms of the opportunities that ICT characteristics of information and communication make possible (See Table 1). For example good health as a QoL indicator - an end with intrinsic value is adapted to the capability of being able to obtain information on good health practices, or ability to contact a doctor when one is ill. It is assumed here that directly relating ICT to a need facilitates the understanding of the ICT-QoL relationship, providing vital input for policy formulation. The list of indicators further incorporates human agency when it considers the aspects of keeping in touch with family and relatives, similar to being able to interact with others as suggested by Gasper (2002) and Anand and van Hees (2006). It is important to underscore here that this list might not be exhaustive but suffices as an indicative list to guide an empirical study since it is grounded in existing empirical and theoretical works. In addition, similar lists or a combination thereof, have acquired practical use as an establishment of individual or community information/communication needs (see for instance e-usage household survey conducted by Research ICT Africa!²).

QoL Dimensions	QoL Domains	Opportunities
Social opportunities	<ul style="list-style-type: none"> ▪ Physical well-being ▪ Social well-being ▪ Emotional well-being ▪ Personal development 	<ul style="list-style-type: none"> ▪ Information on good health practices e.g. family planning, AIDS ▪ Information on availability of drugs and their costs ▪ Being able to contact a doctor ▪ Sensitization on appropriate sanitation practices e.g. building latrines, boiling water ▪ Keeping in touch with family and friends ▪ Obtain News (local, national, international and sports) ▪ Entertainment e.g. listen to music, watch movies, play games ▪ Conduct cash transfers e.g. remittances to family ▪ Information on community activities, interest groups e.g. youth, women ▪ Information on relevant spiritual and religious observations ▪ Information on Adult education ▪ Information on availability of schools e.g. location, school fees
Economic Facilities	<ul style="list-style-type: none"> ▪ Material well-being 	<ul style="list-style-type: none"> ▪ Information on farming/agricultural practices e.g. modern techniques, ▪ Market information e.g. prices and availability of goods ▪ Investment opportunities, plans and practices e.g. in assets like land, livestock ▪ Local micro-finance or banking opportunities ▪ Information on job/employment opportunities ▪ Advisory services on career building or development
Political Freedoms	<ul style="list-style-type: none"> ▪ Rights and Security 	<ul style="list-style-type: none"> ▪ Information on the state or local government e.g. LCs, district administration ▪ Sensitization on civil rights e.g. e.g. domestic violence, gender issues ▪ Information on national/local rules and regulation e.g. paying taxes ▪ Being able to contact people e.g. local leaders in case of an emergency

Table 1: QoL dimensions and ICT opportunities

3. METHODOLOGY

3.1. Case Description

The study was conducted in a selection of four (4) rural communities in Uganda between May and July 2008. Uganda similar to several other developing countries has the majority (85%) of its population residing in rural communities according to the 2005/06 national household survey report (UBOS 2006), which also reported only a small rate of

² <http://www.researchictafrica.net/> (accessed August 29 2008)

rural-urban migration. The major economic activity is subsistence farming (58%), poverty levels are at 85% and literacy levels are slightly above 50%. To facilitate rural development, government, international and private investors are among others implementing and promoting the use of ICT at various levels. Most significant among these is the Universal service/access fund – the Rural Communications Development Fund - which aims at providing access to basic communications services within a reasonable distance to all the people in Uganda; leveraging investment into rural communications development; and promoting ICT usage in Uganda³. The fund policy was developed in 2001 and has been in implementation since 2003 in districts all over the country. Some of the implemented services include: Internet points of presence, Internet cafes and training centers, web portals, public pay phones and most recently school and health-care ICT facilities.

It is important to point out that investigating perception of the role of ICT towards the QoL in a mostly poor community presents some challenges. Most significant is the lack of awareness, knowledge or experience of how information and communication can facilitate the attainment of a good life. In consequence this required precautions in the choice of study sites and methods to ensure rigor in the obtained results.

3.2. Study Site Selection

The selection of study sites was accomplished through purposive sampling which according to Creswell and Clark (2007) involves the intentional selection of study sites and participants who can provide the essential information for a study. First was to ensure regional representation through the selection of a district from each of the 4 regions of the country. Secondly, a county in which an operational universal access fund ICT access facility (Internet café or training center) had been in existence for four or more years was chosen per district (with a few exceptions as discussed below). This was anchored in the need for respondents to have some exposure to various forms of ICT including radio, television, mobile phone, internet/computers and the public payphone.

Third, two parishes were chosen per county in proximity to the ICT facility. The aim was to create an element of *adopters* - possibly those who could easily access and *non-adopters* - those who are probably limited by distance in accessing the ICT services. This also explains the selection of two rather than one county in Kayunga and Mbale districts. For instance, in Kayunga district the ICT facilities were set up in Ntenjeru County. However Ntenjeru is rather small (534 km²) raising the assumption that all its inhabitants can easily access the facilities. In this case another county, Bbaale was opted for to cater for the distant cluster. A similar explanation holds for the selection of Bungokho County in addition to Mbale Municipality which is approximately 24 km².

Respondents who comprised of adults above 16 years were then randomly selected from households within each parish. The number of respondents selected per study site was proportional to the regional population distributions of the four chosen districts. Other criteria used in this selection process were the willingness of ICT facility owners to participate in the study and the aspect of respondent fatigue. Respondent fatigue was especially important as a number of both national and private surveys have taken a toll on willingness to participate all-over the country. For instance, Research ICT Africa recently

³ <http://www.ucc.co.ug/rcdf/default.php>

concluded a nation-wide e-access and usage survey which aimed at establishing a general status in the adoption of ICT in a number of countries in Africa (RIA! 2007). As a precautionary measure, the choice of districts in our study eliminated districts that participated in the RIA survey. The final selection of study sites is presented in Table 2.

Region	District	County	County Size (Km ²)	Parish
Central	Kayunga	Ntenjeru	534.4	Bubajjwe
		Bbaale	1189.7	Bbaale
Eastern	Mbale	Mbale Municipality	24	Malukhu
		Bungokho	494.3	Bufukhula
Western	Masindi	Buruuli	2795.8	<ul style="list-style-type: none"> • Civic Centre • Kimengo
Northern	Apac	Maruzi	1814.7	<ul style="list-style-type: none"> • Akokoro • Abedi

Table 2: Summary of selected study sites

3.3. Data Collection

The study adopted a mixed methods approach comprising multiple data collection techniques. A survey questionnaire comprising of closed questions which aimed to validate the theoretically generated indicators was designed. The questionnaire had two questions with four-point likert scales each. The first was in relation to opportunities requiring respondents to specify the importance of the various aspects. The second then established achievement in terms of how frequently the respondents exploited the various opportunities. This is especially important as it draws attention to what people perceive as important and whether they are actually benefiting or not from the available opportunities given various personal and contextual characteristics like age, gender, level of education etc. The questionnaire also had an open-ended question of factors that influenced the adoption of various forms of ICT. A pilot study was conducted within a community outside the selected study sites by field experts who had undertaken similar surveys in rural communities. A number of revisions in wording and missing indicators were consequently recommended and effected. The study context comprising of individuals with varied levels of literacy demanded that the questionnaire be administered by trained research field assistants so as to minimize incidences of non-response and misinterpretation.

Secondly, focus group interviews were conducted to establish participants' perception of a good life, how this can be achieved through ICT, as well as the factors that affect the full realization of ICT benefits. The focus group interviews were organized and conducted with people who came to use the ICT facilities on the assumption that they were relatively conversant and possibly had access to the other technologies.

4. FINDINGS

This section presents findings from both studies. To analyze the survey data, SPSS data analysis package was used to perform the following: (1) descriptive statistics were used to analyze perception (opportunities) of the importance of ICT towards their QoL and actual achievements in terms of frequency of exploitation of the various opportunities. (2)

An analysis of variance (ANOVA) test was performed to study the possible influence of the various demographic characteristics on the perception of the opportunities individuals could derive from ICT. Similar approaches have been used to assess QoL functionings and capabilities conceptualized through SCA (Kuklys 2004; Anand et al. 2005; Alampay 2006; Anand and van Hees 2006). (3) The focus group interview findings were also collated and presented in terms of the QoL definition and the role of ICT towards this definition.

4.1. Demographics Characteristics

The questionnaire was administered to 454 respondents out of which 445 were usable results. The focus group interviews were conducted with 22 participants in total: 13 from Kayunga and 9 from Mbale districts. Details of the sample demographics are summarized in Table 3.

<i>Characteristic</i>	<i>Survey Sample</i>		<i>Focus Group Sample</i>	
	<i>Frequency</i>	<i>Percentage</i>	<i>Frequency</i>	<i>Percentage</i>
A. Gender				
<i>Female</i>	224	52.7	5	22.7
<i>Male</i>	201	47.3	17	77.3
B. Age				
<i>16 to 25</i>	157	35.8	12	54.5
<i>26 to 35</i>	162	37.0	9	40.9
<i>36 to 45</i>	83	18.9	1	0.05
<i>Above 45</i>	36	8.2	0	-
C. Highest level of education				
<i>Primary</i>	146	32.9	-	-
<i>Secondary</i>	112	25.2	10	45.5
<i>Tertiary</i>	66	14.9	11	50.0
<i>Vocational</i>	33	7.4	1	0.05
<i>None/other</i>	87	19.6	-	-
D. Main activities in last 6 months				
<i>Employer</i>	6	1.4	-	-
<i>Own Account Worker</i>	46	11.0	6	27.3
<i>Government Employee</i>	32	7.7	3	13.6
<i>Private Employee</i>	70	16.8	6	27.3
<i>Unpaid family or domestic workers</i>	107	25.7	-	-
<i>Student</i>	79	18.9	6	27.3
<i>Too old or not working</i>	71	17.0	-	-
<i>Other</i>	6	1.4	-	-

Table 3: Demographic characteristics of Study Sample (N=445)

4.2. Survey Findings

a) Perception of ICT Opportunities and Actual Achievements

Table 4 summarizes the means and standard deviations of the perceived importance of various ICT capabilities on individuals' QoL; and achievements in terms of frequency of use. Four-point likert scales were used for both questions: the opportunities' scale ranged from 1 - not important to 3 very important; while the achievements' scale ranged from 1 - rarely (3 or more months) to 3 - always (weekly/daily). Respondents perceived keeping in touch with family and friends, entertainment accessing news and information on

improved health practices as the most important opportunities ICT can avail, while being able to conduct cash transfers and having access to information on adult education were perceived as least important. On the whole respondents perceived as important the various information and communication opportunities ICT can offer. In as far as achievements are concerned, obtaining information on community activities or on adult education were the least achieved. On the other hand use was more in the social aspects of keeping in touch with family and friends, accessing news and various forms of entertainment. Overall respondents registered the limited exploitation of ICT for their QoL needs⁴.

	<i>Opportunities*</i>		<i>Achievements**</i>	
	<i>Mean</i>	<i>SD</i>	<i>Mean</i>	<i>SD</i>
<i>Information on good health practices e.g. family planning, AIDS</i>	2.43	0.645	1.88	0.750
<i>Information on availability of drugs and their costs</i>	2.13	0.710	1.70	0.727
<i>Being able to contact a doctor</i>	2.31	0.705	1.65	0.739
<i>Sensitization on appropriate sanitation practices</i>	2.47	0.663	1.79	0.778
<i>Keep in touch with family and friends</i>	2.61	0.583	2.41	0.756
<i>Obtain news (local, national, international and sports)</i>	2.47	0.718	2.45	0.740
<i>Entertainment e.g. listen to music, watch movies, play games</i>	2.47	0.642	2.48	0.750
<i>Conduct cash transfers e.g. remittances to family</i>	1.83	0.736	1.63	0.808
<i>Information on community activities, interest groups e.g. youth, women</i>	1.87	0.628	1.45	0.689
<i>Information on relevant spiritual and religious observations</i>	1.98	0.719	1.68	0.799
<i>Information on adult education</i>	1.84	0.750	1.46	0.659
<i>Information on availability of schools e.g. location, school fees</i>	2.01	0.772	1.67	0.765
<i>Information on farming/agricultural practices e.g. modern techniques</i>	2.02	0.742	1.57	0.689
<i>Market information e.g. prices and availability of goods</i>	1.98	0.674	1.92	0.742
<i>Investment opportunities, plans and practices e.g. in assets like land, livestock</i>	1.95	0.734	1.70	0.725
<i>Local micro-finance or banking opportunities</i>	1.90	0.706	1.78	0.734
<i>Information on job/employment opportunities</i>	2.25	0.746	1.84	0.821
<i>Advisory services on career building or development</i>	1.85	0.813	1.62	0.735
<i>Information on the state or local government e.g. LCs, district administration</i>	1.86	0.685	1.64	0.763
<i>Sensitization on civil rights e.g. e.g. domestic violence, gender issues</i>	1.97	0.702	1.60	0.751
<i>Information on national/local rules and regulation e.g. paying taxes</i>	1.92	0.687	1.57	0.694
<i>Being able to contact people e.g. local leaders in case of an emergency</i>	2.28	0.724	1.92	0.865

Table 4: Descriptive Analysis: Opportunities and Achievements

*Used 4-point likert scale: 1 = not important, 2 = important, 3 = very important

**Used 4-point likert scale: 1 = rarely (3 or more months), 2 = occasionally (once a month), 3 = always (weekly/daily)

b) Effects of Demographics on perception of ICT Opportunities

ANOVA test provides results in measures of F-test (F) and statistical significance (Sig.). If sig. is below the significance level (5%), then the statistical evidence implies that a difference exists; or in other words the independent variable has some effect on the dependent variable. The ANOVA results shown in Table 5 indicate that the demographic variables of gender and age do not significantly affect the perception of what opportunities individuals can derive from ICT. Gender only significantly affected the perception on the importance of information on national/local rules and regulation e.g. paying taxes; while age affected perception of the important six factors including information on job/employment opportunities, services on career building or development, social aspects of accessing news and entertainment, being able to contact leaders in case of an emergency and information on availability of schools. On the other

⁴ Even the most reported use averaged at 2, which is occasional use – at least once a month

hand the highest level of education attained and main activities undertaken within the last six months had substantial effects on individuals' perceptions on the number of opportunities they can derive from ICT.

ICT-QoL Indicators	Gender		Age		Education		Activities	
	F	Sig.	F	Sig.	F	Sig.	F	Sig.
Information on good health practices e.g. family planning, AIDS	0.294	.588	0.719	.541	2.329	.042	3.905	.000
Information on availability of drugs and their costs	0.120	.729	0.896	.443	0.837	.524	7.273	.000
Being able to contact a doctor	0.525	.469	1.957	.120	1.198	.309	3.358	.001
Sensitization on appropriate sanitation practices	0.143	.706	1.197	.311	2.866	.015	5.072	.000
Keep in touch with family and friends	1.101	.295	0.733	.533	0.921	.467	2.671	.005
Obtain News (local, national, international and sports)	1.999	.158	3.412	.018	1.832	.105	3.021	.002
Entertainment e.g. listen to music, watch movies, play games	0.270	.604	3.463	.016	1.028	.400	1.520	.138
Perform cash transfers e.g. remittances to family	2.487	.116	0.733	.533	7.321	.000	2.758	.004
Information on community activities, interest groups e.g. youth, women	0.224	.636	0.552	.647	1.407	.221	1.342	.213
Information on relevant spiritual and religious observations	2.645	.105	2.548	.055	1.308	.259	0.796	.621
Information on adult education	0.764	.383	0.338	.798	1.419	.216	2.516	.008
Information on availability of schools e.g. location, school fees	0.802	.371	6.493	.000	5.712	.000	5.685	.000
Information on farming/agricultural practices e.g. modern techniques	0.273	.602	1.304	.273	0.645	.666	2.507	.008
Market information e.g. prices and availability of goods	0.419	.518	1.833	.140	0.969	.437	2.652	.005
Investment opportunities, plans and practices e.g. in assets like land, livestock	0.101	.751	2.194	.088	7.024	.000	5.961	.000
Local micro-finance or banking opportunities	1.258	.263	2.537	.056	7.256	.000	4.735	.000
Information on job/employment opportunities	0.324	.569	11.503	.000	14.028	.000	6.065	.000
Advisory services on career building or development	0.201	.654	7.651	.000	20.652	.000	10.041	.000
Information on the state or local government e.g. LCs, district administration	0.655	.419	2.142	.094	0.432	.826	2.331	.014
Sensitization on civil rights e.g. e.g. domestic violence, gender issues	0.962	.327	0.840	.472	2.350	.040	2.850	.003
Information on national/local rules and regulation e.g. paying taxes	4.462	.035	2.191	.088	1.829	.106	3.384	.001
Being able to contact people e.g. local leaders in case of an emergency	0.768	.381	6.093	.000	0.879	.495	2.841	.003

Table 5: ANOVA Analysis: Effects of Demographics on Opportunities

4.3. Focus Group Interview Findings

a) Defining a good life

Table 6 provides a summary of what participants in the focus group interviews in Kayunga and Mbale identified as a good life. Furthermore participants identified quite a number of factors in the social and economic dimensions and only personal security and safety from theft or crime, fires or community unrest were identified as vital under the political freedoms dimension.

QoL Indicators
Economic Opportunities

<ul style="list-style-type: none"> ▪ Possession of assets like a house, car, farming land, computers/internet, good clothing ▪ Having a good job ▪ Being self employed, being able to earn a living ▪ Having extra/surplus income ▪ Ability to support (financially and physically) one's self ▪ Quality feeding
<i>Social Facilities</i>
<ul style="list-style-type: none"> ▪ High level of education, possession of computer skills ▪ Access to better health facilities and services ▪ Entertainment, leisure ▪ Self esteem ▪ Being respected in the community ▪ Being able to help others, hospitality ▪ Being a part of and loved by family ▪ Being in a happy (humorous) environment. ▪ Access to information ▪ Having a peace of mind ▪ Easy access to services like transport and communication networks ▪ Being God fearing
<i>Political Freedoms</i>
<ul style="list-style-type: none"> ▪ Personal security from community instabilities, theft etc

Table 6: Indicators of a Good Life

b) Perception of the Role of ICT towards QoL

A summary of what the discussion participants perceived they could do or be or what they had actually achieved (doings or beings) with ICT is provided in Table 7. Similar to the QoL definition, participants had a limited perception of the importance of ICT towards their political freedoms. Participants were not aware of what more they could do with ICT in exercising the political freedom, aspects like being able to exercise their political rights in choosing national or local leaders were unknown to the participants. It is only after pressing for feedback that some participants pointed out that they participated in some political radio talk shows. In addition the aspect of doing cash transactions through the mobile phone was only brought up later in the discussion and had been performed by a minority of the group participants.

ICT facilitated QoL Opportunities and Achievements

Economic Opportunities

- Conducting business transactions like ordering drugs, sending news items to media houses, contact business associates etc
- Searching for job opportunities
- Create job opportunities for those working in the ICT industry/sector e.g. airtime sellers, payphone attendants

Social Facilities

- personal/private communication with relatives and friends through email and making phone calls
- Sharing health related information e.g. sensitization on impending diseases
- Obtaining information for personal spiritual
- Conduct research and distance education
- Personal skill developments, e.g. improved individual marketing strategies
- Communicating with relatives in case of tragedy e.g. death
- Entertainment - music, making friends ("penpals"), reunion with old friends,
- Maintaining personal relationship
- Money transfers to relatives i.e. transfer airtime through "me to you", the relative sells it and obtains money
- Enabled savings on transport costs and time
- Obtain donor support for personal and community development projects

Political Freedoms

-
- Obtain sensitization on national political events through radio and TV
 - Security purposes, e.g. notify community members of fire outbreaks; contact police, leaders or relatives in case of burglary
 - Information dissemination and education on district programmes at community level
 - Being able to participate in talk shows aired on radio and TV
-

Table 7: Focus Group Perceptions of ICT Opportunities and Achievements

b) External Factors that influence ICT use

Table 8 summarizes the factors both questionnaire respondents and focus group participants generally pointed out as affecting their use of the various forms of ICT. It was established that the mode of availability and ownership affected use. Respondents specifically pointed out that having to borrow or lend especially the mobile phone and communal/shared use specifically of the radio forced people to listen to programmes they were not interested in. Financial constraints on use were identified as: initial purchase costs of ICT, maintenance costs (i.e. phone top-up, high battery cost), and internet/computer training costs. In relation to the general lack of awareness of the possible ICT opportunities, respondents also pointed out the lack of skilled personnel to train individuals in the use of Internet/computer. Technical issues like electricity and quality of services (i.e. poor network signals and inadequate bandwidth) were also identified as hindrances in the use of ICT. During the focus group discussions it was further established that unsolicited text messages and emails also constrained use and that pornographic pop-ups were a deterrent to use internet/computers in public access points. Respondents also mentioned that they did not use the mobile phone because they had no one to call or business to conduct; while some did not have the time or thought they were too old to use internet and computers. This alludes to an issue of compatibility of one's values and needs with the use of ICT.

Factors influencing ICT use	
<p>Availability and Ownership</p> <ul style="list-style-type: none"> ▪ borrowing from or lending ICT to family, friends and neighbors ▪ Shared use, e.g. listening to programmes one is not interested in <p>Financial Constraints</p> <ul style="list-style-type: none"> ▪ Initial purchase costs, ▪ Maintenance i.e. high tariffs-call charges, batteries ▪ Training costs <p>Knowledge, skill to use</p> <ul style="list-style-type: none"> ▪ Easy to use or handle for radio or mobile phone ▪ Lack of awareness of inherent value in ICT ▪ Complicated functionality or features e.g. text messaging ▪ Lack of skilled training personnel 	<p>Technical Issues</p> <ul style="list-style-type: none"> ▪ Quality of service ▪ Electricity availability and costs <p>Compatibility - Purpose of use</p> <ul style="list-style-type: none"> ▪ No one to call or business to conduct ▪ Not interested e.g. old and illiterate, ▪ Lack of privacy e.g. payphone ▪ Distance and accessibility of payphone in the night ▪ Time to access due to other pressing needs <p>Community and Cultural influences</p> <ul style="list-style-type: none"> ▪ Lack of trust between spouses, parents and children ▪ Restrictions of use by parents to children <p>Peer Pressure</p> <ul style="list-style-type: none"> ▪ from family and friends ▪ the need to catch-up with the rest of the world

Table 8: External Factors influencing ICT use

5. DISCUSSION

5.1. Quality of Life Definition

The QoL constructs used in the survey were theoretically motivated through a literature review and adapted to reflect the capabilities definition of what individuals can be or do. It is evident from the list of freedoms identified that development comprises both means and an ends. For instance (Table 6), while respondents identified substantive freedoms such as having self-esteem and a peace of mind, they equally regarded being employed and easy access to social services which are of instrumental value also as part of their definition of a good life. In addition, a comparison of the theoretically generated indicators with the definition obtained from participants in the focus group interviews (Table 6) reveals some similarities especially in the economic facilities dimension which alludes to the material aspects of life like the possession of a house, food, a car, a job or earning an income. Worth noting is the qualification which indicates a form of improvement on some of the attributes for instance quality feeding, extra or surplus income or even attaining a higher level of education. Similar to an earlier study conducted in South Africa (Clark 2003), this implies that people's definition of a good life was not entirely affected by their living conditions. This could be attributed to the fact that despite their living conditions, people in the rural communities in Uganda have been exposed to the general perception of what is considered a good life and therefore have an idea of what a better life than what they are currently living is. On the other hand majority of the focus group discussants were fairly literate (Table 3) and could easily distinguish between the basic and improved opportunities for a good life.

As established in previous studies (Tiliouine et al. 2006; Arku et al. 2008), the study also affirms the assertion that development even for the rural poor is normally misleadingly presented in terms of meeting economic needs and accumulation of wealth. It is established here, for instance similar to the developed countries like Australia (Cummins et al. 2003), that despite the limited economic resources, the rural poor also value the social aspects of interaction with family and friends. Notably though, participants had very little to define their QoL in relation to political freedoms. This could be attributed to the status of Uganda's democracy and political participation which similar to several developing countries presents citizens with only a few such opportunities. For instance democratic elections at national and local council levels only take place every five years; and this is one of the main channels through which citizens regularly exercise this freedom. Other opportunities such as multiparty politics and public decision-making are still in their infancy and have not been extensively exploited. Furthermore political freedoms are opportunities the state provides or enables its citizens to perform and unless the necessary mechanisms are in place, this can not be fully exercised. These have resulted in citizens placing less emphasis and value on such freedoms which in certain instances they might not even be aware of.

5.2. Opportunities and Achievements: Perception of the role of ICT in individuals' QoL

Both the survey and group discussions suggested that people approved of the opportunities they could obtain from ICT, with the highest rank of importance awarded to the social interaction aspects in comparison with the economic and political opportunities (Tables 4 and 7). This confirms anecdotal evidence that ICT especially for the rural poor is a source of pleasure and facilitates social networking with family and friends. Furthermore focus group discussion revealed that the few who accessed the Internet mostly used it in making friends (“penpals”) or accessing international and sports news. Incidentally aspects that were perceived as least important are the social, economic and political aspects such as career development and adult education that facilitate one’s personal development leading to the attainment of even other life goals like an improvement in income and possession of assets.

Considering external influences on ICT adoption and use, it is argued here that the nature of institutional support particularly the approaches to ICT service provision for the rural poor in Uganda have a key role to play. Uganda’s strategies and approach to universal access/service have over the years purposed to make services accessible to and affordable by the target beneficiaries (UCC 2001). According to these strategies and unlike a capability-driven perspective, the major factor inhibiting the use of ICT in the rural communities is poverty; translated as the lack of a disposable income. To some extent this has addressed by national efforts such as the liberalization of the telecommunications sector, encouraging competition, widespread service provision and reduction in service costs among service providers. However while services are now available albeit with limited access, people also point out having limited awareness of the extent to which these services can be exploited to meet especially their economic and political needs. This has therefore resulted in available, but under-utilized services, since for instance though people value information on good health practices; they do not know how to obtain this through the Internet, and there are further challenged by the limited availability of skilled personnel. Furthermore, while the current universal access strategy adopts a human development stance, this is limited to supporting sector specific human development goals (UCC 2005). Therefore unless a sector such as health, education or tax administration rolls out a service and empowers people to exploit it for their own good, people will remain adamant in exploiting such opportunities. As discussed earlier considering that state provision and citizen exercise of political freedoms are still in their infancy in Uganda, the use of ICT to support such opportunities has also not been greatly appreciated. While several government organs have websites and the national fiber backbone has been completed, citizens still have limited value of the political freedoms ICT can enable. This is attributed to people’s limited perception and lack of awareness of their role in the political development of the country.

In view of the effect of personal characteristics on perception, the insignificant influence of gender on people’s perceptions of the ICT opportunities corresponds to observations made during the group discussions in which both female and male participants easily voiced their opinions. This can be accounted for by the fact that a substantial number of the survey respondents were literate (Table 3), with levels of education fairly distributed between genders (i.e. primary: female =56% and male = 44%; secondary: female=57% and male=43%; tertiary: female 48% and male=52%). In addition, age which has been established as having a significant influence on the use of

various forms of ICT (cf. Alampay 2006) was only significant in a few perceptions of ICT opportunities. Again comparing age to level of education which significantly influenced people's perceptions, the majority of survey respondents were in the 16 to 25 (35%) and 26 to 35 (36%) age brackets; and the highest level of education attained by a considerable number of these participants was either primary or secondary. This could explain why age only significantly affected aspects of employment, career development, news, entertainment and availability of schools, as these age brackets are in search for employment opportunities and further education. The significant influence of education on individual perceptions in the economic, health related and personal development was expected on the pretext that with some level of education one is in position to seek information on various life aspects. However an unexpected finding was the effect of people's activities on their perceptions of ICT opportunities. What could account for this result is that the bulk of the people in this survey sample were unpaid family or domestic workers, had own businesses or were private employees (Table 3). In this respect the significant influence especially on the perception of opportunities in the economic dimension is the conviction that ICT could be a means through which people create own jobs or improve their existing businesses in pursuit for a good life.

Comparing perception of opportunities to the actual achievements alludes to a contributory relationship between the two. The stance that various forms of social interaction were perceived as most important, and were the most frequent uses of ICT advances the notion that what people had actually achieved determined their perception of importance or vice-versa. This is confirmed by information systems technology acceptance theories which posit that perception of how useful technology is affects the eventual use for the achievement of a good life (cf. Venkatesh et al. 2003). In addition the achieved aspects (social outcomes and pleasure) are of intrinsic value; which come easily and are within the control of the individuals themselves. This is an indication of early adoption of ICT which reveals that people generally appreciate ICT for what it is and not necessarily what it can do. This is especially true given that participants in the discussions pointed out the need to be connected (not connected for what); the need to catch up with the rest of the world as one of the reasons for using ICT.

5.3. Study Limitations and Future Work

A major limitation of this study is that since data collection was a one time-snapshot and self-reporting exercise, it cannot be guaranteed that the findings obtained were the true respondent preferences. As Clark (2003) points out, respondents may conceal some preferences or even want to impress the interviewer, therefore responding incorrectly to the questions. Findings can be re-enforced through a longitudinal study involving other methods like observations that delve deeper into the day-to-day lives of people.

QoL is broad and while the findings from the survey provide a general overview, and suggest a limited perception of ICT importance and actual use in both economic and political aspects, it did not exhaust all indicators. This was attributed to the need to develop a questionnaire for which constructive feedback could be obtained, and at the same time ensure that the multidimensional characteristic of QoL is well considered.

A further limitation is that this paper focuses on how the capability approach can facilitate the definition of QoL indicators and does not extensively investigate the

influence of contextual factors (such as cost, relevant skills, availability of ICT, language etc) on people's perception of the possible opportunities ICT provides. In addition, this study does not explicitly focus on the ICT through which the perceived information and communication needs are obtained. Moreover these have been suggested as important influences on the adoption and use of ICT for various life goals, an aspect that will be considered in subsequent research. This will extend the current work to develop an understanding of how both the perceptions developed here and the various contextual factors influence adoption and use of ICT by people in rural communities in Uganda.

6. CONCLUDING REMARKS: THEORETICAL CONTRIBUTION AND PRACTICAL IMPLICATIONS

This study confirms that the capability approach is a valuable framework that can facilitate the investigation of the potential impact of ICT on the QoL of people in terms of what they can do. Specifically the application of the capability set construct to conceptualize a range of opportunities that ICT can provide and those that people value is a contribution to both SCA and ICT4D research and practice for which empirical research is still in its emergent stages. In this respect, it is proposed that QoL capability indicators can be developed basing on aspects of what people can do in the various life dimensions and assessed in relation to people's perceptions. The study has also established that the level of education and what people do in relation to work are key influences on their perceptions of what they can actually achieve from ICT.

Unlike QoL concepts that focus on satisfaction with life, what SCA provides is an objective list of life's aspects that can be influenced by policy. As such an analysis on the potential and actual ICT contribution towards people's QoL establishes gaps which are vital for the state and policy makers. The perceived importance and actual use of ICT in meeting mostly people's social needs suggests that ICT adoption by the rural poor is still in its emergent stages and the limited awareness of the ICT potential towards people's QoL. In addition to providing infrastructure, this requires policymakers to intensify efforts aimed at creating awareness which should contribute to people's improving people's agency. Once achieved, this would probably meet the demands of empowering citizens to live the lives they value.

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