The internet and poverty in developing countries

James, M.J.

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The Internet and poverty in developing countries: Welfare economics versus a functionings-based approach

Jeffrey James*

Department of Economics, Tilburg University, P.O. Box 90153, 5000 LE, Tilburg, The Netherlands

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Abstract

There are many reasons why the impact of the Internet on poverty in developing countries is poorly understood. Not the least of these reasons has to do with alternative modes of thinking about the issue. In this paper, we examine the theories of consumption underlying two important evaluative frameworks, namely, traditional welfare economics on the one hand and Sen's notion of functionings on the other. Using a number of actual examples, we find that in at least two major respects, the former approach is far too limiting and needs to be replaced by the latter (which, in particular, focuses on the actual use that is made of the Internet and embraces, rather than excludes, disciplines other than economics). The functionings approach has a close affinity with ethnographic research, which, as we tried to show, reveals much about the less visible impact of the Internet on poverty.
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1. Introduction

As information and communications technologies (ICTs) become ever more prevalent in developing countries, so too does it become increasingly necessary to understand how these technologies bear on the well-being of those living in poverty, mainly, but not entirely, in the rural areas of those countries. (Because there are so many new ICTs, it would be impossible within the scope of a single paper, to deal with all of them. Accordingly, we have chosen to focus our attention on just one of them, namely, the Internet). Yet, despite this growing necessity for improving our understanding of whether and to what extent the Internet alleviates poverty, one can point to remarkably little

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* Tel.: +31 13 4662320; fax: +31 13 4663042.

E-mail address: m.j.james@uvt.nl.

progress in the area. And while it is not difficult to find plausible reasons for this state of affairs, surely one of the most fundamental is the absence in the literature of a realistic analytical framework for mapping the connections between the Internet and poverty at the micro level.

Our goal below is to make the case for using Sen's functionings approach [16] to fill part of this analytical void. Part of the case is made in the following section, which argues that the theory of consumption embodied in this approach is infinitely more realistic than the theory underlying traditional welfare economics. Then, in the sections thereafter, the case for the former approach is further advanced by drawing on selected case studies where the Internet has been introduced in poor, rural areas.[1] For, what will hopefully become apparent is that Sen's approach provides a framework within which such cases can fruitfully be explained and understood. The one essential point that we try to make is that the benefits (or what Sen calls 'functionings') of the Internet are not only broad-based, but also vary dramatically with the way in which this technology is actually used. The other is that the denotation of the relevant functionings demands much more than the mono-disciplinarity of traditional welfare economics.

2. The functionings approach vs. traditional welfare economics

The most obvious of the differences between these two approaches is the way in which they interpret individual well-being. In particular, according to Alkire [1]

> "Sen argues that functionings—that is, 'the various things a person may value doing or being'—taken together create a better conceptual space in which to assess social welfare than utility or opulence. Functionings are 'beings and doings', such as being nourished, being confident, or taking part in group decisions. The word is of Aristotelian origin and, like Aristotle, Sen claims, significantly, that 'functionings are constitutive of a person's being'. So when [say] Oxfam undertakes to evaluate an individual's or group of persons' well-being (in the course, perhaps, of assessing their quality of life, standard of living, social welfare, or level of poverty), Sen would argue that it must have in view their functionings. How did the 'beings and doings'—expand and contract?" (p. 5).

No less important than this difference in focus between functionings on the one hand and utility on the other, however, is that whereas the former is a highly conditional concept, the theory of consumption underlying welfare economics, allows of no such uncertainty. This crucial distinction is captured in Table 1, which juxtaposes the main assumptions about consumption that are made in the one theory as against the other.

Note from the first row of Table 1 that the functionings in question need not be confined to a particular set, thought be relevant initially. Rather, there is scope for the possibility that certain functionings may emerge after a new good or technology is introduced, while others, conversely, turn out to be less important than initially anticipated.

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[1] This part of the paper draws in part on James [11].

Table 1
Traditional welfare economics vs. functionings approach

Dimension	Welfare economics	Functionings approach
Purpose of consumption	Utility. 'The welfare of the individuals is represented by utility, usually understood as desire fulfilment or preference satisfaction' [13]	Functionings eg. the ability to be free of disease, hunger, social isolation. Not fixed but can change the consumption process
Point at which goal of consumption is realized	Point of purchase	What occurs after purchase
Degree of certainty in outcome	Total (so that there can be no disappointments)	Depending on circumstances, may be high or low. i.e. outcome is contingent, depending on individual conversion factors
Variables influencing outcome	Income, (given) preferences and prices	Wide range of variables, some of which inhere in the individual, while others are more socially determined
Relevant disciplines	Economics	Multiple (e.g. ethnography, medicine, psychology)

As shown in the second row of the Table, traditional consumption theory assumes that utilities are derived at the point where goods are actually purchased. The functionings approach, by contrast, assumes that what matters occurs after the point of purchase, when the good is actually used. "In getting an idea of the well-being of the person", writes Sen, [16] "we clearly have to move on to 'functionings', to wit, what the person succeeds in doing with the commodities and characteristics at his or her command" (p. 10).

The Table also suggests that a wide variety of variables play a role in determining the outcome of this process. Some of these variables have to do with the personal characteristics of individual consumers, while others are more social in character. Let us deal first with the former (recognizing that the distinction may in some cases be difficult to make).

2.1. Variables related to the individual

Perhaps the clearest example under this heading is the impact of a medicinal drug on the individual's ability to be free of illness. For, as Table 2 shows, this impact will tend to vary (at times sharply) according to age, gender, genetic predisposition, body weight and overall health status.[2]

To these already complex mechanisms through which medicinal drugs affect an individual's ability to be free of disease, one could add another distinct set of variables which bear on the way that the drugs are actually used—whether, for example, they are taken in the correct amount, at the right time of day, and whether a treatment programme is

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[2] For further discussion of this and other issues related to the impact of medicinal drugs on persons living in developing countries, see James [10].

Table 2
Selected individual characteristics

Source	Mechanisms/examples
Age	'The main reason that age affects drug action is that drug metabolism and renal function are less efficient in babies and old people, so that with some exceptions, drugs tend to produce greater and more prolonged effects at the extremes of life' (Rang, Dale and Ritter, 1995: 785)
Genetic factors	'Genetic variation is an important source of pharmacokinetic variability' (i.e. variability due to altered handling of drugs by the body, which leads to differing concentrations of the drug at the site of action) (Rang, Dale and Ritter, 1995: 789)
	Genetic variation can also cause differing physiological responses to the same drug concentration and some such responses even at low dosages)
Disease	'Disease can cause altered handling of drugs by the body (pharmacokinetic variation) and/or altered sensitivity to drugs' (Rang, Dale, Ritter, 1995: 42). Vaccines given to those suffering from protein-energy malnutrition may be ineffective, or less effective than vaccines given to those with adequate amounts of these nutrients (Silverman, Lee and Mydecker, 1982)
Psychological	Pregnancy, weight (the therapeutic function of a drug may often be inversely related to the weight of patients), sex (female patients tend to react more strongly to most medications and to suffer from a higher incidence of adverse effects) Martin, 1979)
Psychological	The placebo effect: 'It has been found that a placebo can potentiate, attenuate, or negate the active ingredients in a drug (Wickramasekera, 1985: 226)

Source: James [10].

followed to its completion. Because of the very wide range of possible outcomes that can accompany the use of medicinal drugs, the contingent aspect of the functionings approach is brought out very clearly by these examples (about which traditional consumption theory would have little to say).

This conditional element of the relationship between consumption and well-being in the functionings approach is no less apparent when one considers social, rather than individual, aspects of the consumption process.

2.2. Variables related to society

In emphasizing the social aspects of functionings, Sen [16] admits into his analysis a range of variables that rarely enter into the economic literature on well-being and poverty in developing countries. He invites us, for example, to:

> "Consider a commodity such as bread. It has many characteristics, of which yielding nutrition is one …. In addition to nutrition-giving characteristics, bread possesses other characteristics as well, e.g. helping get-togethers over food and drinks, meeting the demands of social conventions or festivities. For a given person at a particular point in time, having more bread increases, up to a point, the person's ability to function in these ways" (p. 25).

More generally, the recognition that poor persons are not only concerned with basic physical functionings, but also with more complex issues such as self-respect, status and a sense of belonging, accords better with the anthropological findings on the subject, than

the literature which is based on Maslow's hierarchy of needs. For, whereas the latter assumes that the need for, say status, only emerges after the more 'basic' types of functionings (such as freedom from hunger, thirst and disease) have been satisfied, the former contains many examples where this is patently not the case (that is, where poor consumers prefer to buy goods that are intensive in 'luxury' rather than basic characteristics). In a study of Brazilian survey data, for example, Wells [23] found that increased spending on durable goods by low-income groups, gave rise to a decline in more basic commodities such as nutrition and housing standards. As regards Africa, [3] it is apparently not uncommon to find 'individuals who stint on food to the point of malnutrition in order to purchase garments dreadfully unsuited to the local climate' (p. 387).

That poor consumers often seem to behave in this way throughout the developing world, tends to be regarded by economists as the deplorable outcome of the marketing and advertising practices of multinational corporations; practices that have the effect of shifting tastes towards expensive foreign goods.[3] To anthropologists, on the other hand, the problem has to do more with the ill-founded views about consumption held by economists and in particular the disdain with which they regard the non-material needs of the poor. As Douglas and Isherwood [5] put it:

> "In the absence of an explicit account, implicit ideas about human needs creep into economic analysis unseen. The two main assumptions use each other for support, yet the combination is still dubious. On the one hand is the hygienic or materialist theory; on the other, the envy theory of needs. According to the first our real needs, most basic and universal, are our physical needs, those we have in common with livestock. Probably to avoid a too grossly veterinarian approach, a curious moral split appears under the surface of most economists' thoughts on human needs; they do recognize two kinds of needs, spiritual and physical, but they accord priority to the physical. They allow it the dignity of a necessity, while they downgrade all the other demands to a class of artificial wants, false, luxurious, even immoral …. The biological becomes the good and the spiritual is unjustified" (p. 16–17, emphasis added).

Much of this pronounced bias in favour of physical needs on the part of economists, resides, according to Douglas and Isherwood [5], in the fact that consumption has become almost totally divorced from the social system, of which it necessarily forms part. What needs to occur, accordingly, is, as they see it, to reset consumption back into its social context, which, among other things, will reveal just how compelling non-physical purchases can actually become among poor households in developing countries. Consumption, that is to say:

> "has to be recognized as an integral part of the same social system that accounts for the drive to work, itself part of the social need to relate to other people, and to have mediating materials for relating to them. Mediating materials are food, drink and

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[3] As well argued in van Kempen [12].

hospitality of home to offer, flowers and clothes to signal shared rejoicing, or mourning dress to share sorrow" (p. 4).

Moving in the direction advocated by Douglas and Isherwood, not only requires us to eschew the mono-disciplinary focus of traditional welfare economics, but it also calls for a practical method that sets consumption in the relevant culture and society (anthropologists, as noted below, have responded to this methodological requirement in the form of ethnography, which 'aims at an holistic understanding of the complete context of a project').

3. Application to the Internet and poverty in developing countries

Following the distinction made in the previous section, we shall apply the functionings approach first to the individual characteristics that influence the relationship between the Internet and poverty and thereafter to the social context in which this relationship takes place. Our focus on the first application will be on so-called 'telecentres', which, largely on the basis of foreign aid, pervade the rural areas of many developing countries. What we wish ultimately to demonstrate, however, is that the benefits of the Internet depend heavily on how it is used.

3.1. Telecentres, the Internet and individual functionings

Defined broadly as donor-funded community access points, offering a wide range of information technologies (including the Internet) to inhabitants of rural areas, [14]'Telecentres have been hailed as the solution to development problems around the world because of their ability to provide desperately needed access to information and communications technologies (ICTs)' (p. 1, emphasis added).

Underlying such optimism is apparently the notion that, since the individual ownership of such technologies in rural areas is well-nigh impossible, communal access can serve as an alternative mode of access.[4] The importance of gaining access to the new technologies has, moreover, been reaffirmed at the World Summit on the Information Society in 2003. In the Summit's Plan of Action, [24] for instance, one can find an unequivocal statement of the need for persons to gain access to ICTs and for this to come about through the establishment of 'multipurpose community public access, providing affordable or free-of-charge access for their citizens to the various communication resources, notably the Internet'.

How well, however, has this model actually worked in practice? To what extent, that is to say, has it led to an improvement in individual functionings in generally remote, rural areas? Unfortunately, the data required to answer this question are rather scant, for most developing regions where telecentres have been established. Almost certainly, the most extensive evaluation has been carried out by the International Development Research Centre in sub-Sahara, where, between 2000 and 2001,

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[4] As occurs perhaps most obviously in the case of public payphones.

approximately 3500 respondents from five countries were sampled in 36 telecentres and cyber cafes [7].[5] From our point of view what is striking about the result of this survey is not merely the typically low percentage of users of the Internet (see Table 3 for the Mozambique case), but also that the same personal characteristics served as a clear discriminant influence on the outcomes. In particular, 'Users are shown to have been disadvantaged on the basis of age, gender, education, literacy levels, and socio-economic status' (Etta, 2003). These are all groups lacking the necessary communication skills, that, as Viherä and Nurmela [22] rightly emphasize, need to be available to a large number of members of society if information technology is to become part of a well-functioning component of the social system.

For large numbers of disadvantaged persons, therefore, the availability of Internet service has had no impact whatever on their individual functionings, not because of the way in which the service has been used, but rather because it has not been used at all. Extreme though this example may be, it is not at all excluded by Sen's theory. The point being [21] that 'What matters for well-being is not just the characteristics of commodities consumed, as in the utility approach, but what use the consumer can and does make of commodities. For example, a book is of little value to an illiterate person' (p. 18, emphasis added). Or again, in Sen's [15] words, 'bicycling has to be distinguished from possessing a bike' since the person concerned may be 'able-bodied or crippled' (p. 10). The latter case closely resembles the non-use of the Internet by disadvantaged persons in telecentres, that were established precisely to bring the benefits of this technology to these and other inhabitants of rural areas.

The problem is basically that simply making Internet access a communal rather than an individual possibility, is not enough to overcome the fact that this technology was designed in and for the conditions prevailing in developed countries, where these conditions include levels of user skills, education, incomes and attitudes.[6] In developing countries, by contrast, the conditions diverge widely from those in richer countries, and the greater is the degree of divergence, the less tends to be the possibility that poor persons will actually be able to use the Internet, even if it is available at no cost. For those who do manage to 'get online', moreover, it is by no means certain that the result will be reflected in improved functionings. The problem is that the same personal characteristics listed above in relation to the non-use of Internet services, come into play at later stages of the process as well [4]. For one thing, 'a lot of information demands that the reader has a specific education if the content is to be understood the way the author intended it. Meaning is not inherent in the sign itself, but is produced by the person, who looks at it' (p. 15).

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[5] Note that sub-Saharan is by no means the only region where telecentres have experienced highly disappointing outcomes, since there are also many similar cases in Latin America and Asia. One of the most publicized cases in the former region is the LINCOS project, linked, among other institutions, to the MIT Media Lab [2].

[6] As stressed by Sharma [17] in relation to the low-cost Simputer in India, infrastructural facilities can be at least as important. He points, for example, to the lack of basic infrastructure and utilities in rural areas, as well as the absence of a functioning micro-finance system. The lack of electricity in villages can be overcome partly by batteries, but only within a few hours of using the Simputer.

Table 3
Frequency of use of telecentre services (Mozambique)

Telecentre services		Frequency of use											
		5 D/W		3–4D/W		1–2D/W		2D/M		1D/M		Total	
		M	F	M	F	M	F	M	F	M	F	M	F
Manhiça	E-mail	4	0	0	0	9	0	2	0	2	0	17	0
	Internet	4	0	0	0	3	1	3	0	0	1	10	2
	Use of computer	13	7	11	2	8	0	3	0	4	0	39	9
	Telephone	6	3	9	2	10	2	2	1	1	1	28	9
	Fax	1	0	1	1	0	1	1	1	0	0	3	3
	Photocopies	6	1	11	0	6	1	5	2	7	2	35	6
Namaacha	E-mail	3	1	2	0	2	2	1	0	1	1	9	4
	Internet	1	0	0	2	1	1	1	0	1	1	4	4
	Use of computer	9	2	1	2	5	5	1	0	1	0	17	9
	Telephone	12	10	16	8	11	9	3	0	0	1	42	28
	Fax	2	1	0	0	1	2	0	0	0	0	3	3
	Photocopies	12	4	3	6	27	4	4	5	2	9	58	38

Key: D=day; W=Week; M=Month; M=Male; F=Female; D/W=Days per week; D/M=Days per month.
Source: Etta & Wahamiu [7].

Just as in the case of medicinal drugs discussed above, it is conceivable that use of the Internet may in some circumstances have a negative influence on functionings [4]. Such a case could occur, among other circumstances, when information is:

> "misunderstood with severe consequences: It is easy to imagine people taking matters into their own hands, if access to for instance medical advice is available online. A visit to the doctor or the veterarian is costly, and maybe there is no one close by. In such a case it is tempting to attempt a treatment based on advice from the Internet, but this can easily become an outright invitation to quackery. Even if someone can identify the exact symptoms displayed by the sick family member of neighbour, it is a huge leap from there to identify the actual disease and hence also the right treatment" (p. 15).

What is needed, ultimately, is information that is relevant to and understandable by, precisely those persons, who, by virtue of their personal attributes (specified above) are currently excluded from the benefits that the Internet is capable, in principle, of delivering. The following section provides some indication of how this could be achieved (albeit not with the help of the telecentre approach).

3.2. The social context of Internet use and the implications for individual functionings

In contrast to the now debunked model of technology transfer that underlies the use of telecentres in developing countries, an ethnographic view [19] recognizes that:

> "The ways in which people use technologies such as… the Internet are defined in large part by their local everyday lives, the social, political, economic and cultural environment in which they live, and by the ways in which they appropriate these technologies…. It is also recognised that projects imposed from the outside are less likely to tap into existing communication networks, that a lack of understanding of

and engagement with the local social, cultural, economic and political milieu will not bode well for ICT projects that seek to bring about change (e.g. giving greater access to civil society, reducing poverty, improving information and communication flows)" (p. 1).

This citation is important because it is not only an implicit critique of the telecentre approach, but also the technological manifestation of Sen's appeal for assessing the welfare effect of commodities (notably bread), from a social as well as a nutritional point of view. Let us then consider an actual case, which comes as close as any I am aware of in demonstrating the connections between the Internet and individual functionings in a social arena. The case in question belongs to a category of technological blending, where information from the Internet is broadcast over community radio, thereby obviating the need for rural inhabitants to have any direct contact with the latter technology (and since the former is widely owned even in the rural areas of most developing countries the potential impact is very large).

When read alongside the experience with telecentres, it well demonstrates the major theme of Sen's work, namely, that the same commodity can have totally different effects on functionings when used in one context rather than another. The 'radio browsing' model adopted at Kothmale Community Radio Station in Sri Lanka, illustrates, as we shall see, other aspects of the Sen approach as well.

4. Radio browsing' at Kothmale community radio station

As described by Pringle and David [15], a programme known as 'radio browsing' (which forms part of the 'Kothmale Internet Project' in Sri Lanka), is widely regarded as a pioneering attempt to bring the resources of the Internet to bear on local circumstances (indirectly via the radio station, rather than directly, as in the case of telecentres). In particular,

> "Radio web browsing has opened a window onto the Internet for the local community. —After researching their topics and choosing websites to feature, Kothmale's programmers browse the Internet live on the radio using a computer in the studio. The content of each programme focuses on specific information within a different topic: health, legal issues and ICTs themselves. Staff, volunteers and guest experts provide interpretation and translation of well-based information for the local audience. A huge amount of information becomes accessible, first because it is explained in simple terms, secondly because it is contextualised to suit the local environment and thirdly and most importantly, information is presented in the local languages.… ICT's and the web become the focus of the programme in terms of both content and format—the shows are essentially live web-browsing telecasts (emphasis added)" (pp. 5–6).

If, therefore, the radio programmers were able to make the Internet relevant and accessible to the 200,000 potential listeners within broadcasting access of the studio, the audience also played its part in ensuring an interactive process of communication. For, in

the form of a steady supply of letters, calls and drop-ins, listeners posed questions that were answered by the station during a designated portion of the daily broadcast. It is these specifically local aspects of the attempt to blend old and new technologies at Kothmale, rather than the general notion itself, that seem to account for what many observers regard as a successful outcome of radio browsing (about which more below).

Certainly, the radio browsing model can be said to have overcome or mitigated the very problems that tend to undermine the 'access to' technology approach, as embodied typically in telecentres, whose presence in the developing countries is as noted above, already so pervasive. For one thing, the difficult problem of illiteracy in many of the poorest regions of developing countries, is overcome by the oral (as opposed to written) transmission of information from the Internet (which, also, by definition eliminates the need for user capabilities with respect to operating computers and navigating the Internet). Because the radio programmers belong to and are familiar with the needs of the community, they are well placed to select relevant web-sites. And the value of the information contained on those sites is sharply enhanced by the expert volunteers on the programme, who are able to interpret, simplify and translate it.

Especially, since this manner of conveying information seems to have been widely appreciated among the community, it is all the more lamentable that there is so little information on the effects of the project on a range of individual functionings (or, more generally, the effects of Internet use in radio-programming as a whole at Kothmale). What does seem clear from the available anecdotal evidence, however, is, in the first place, that the information conveyed through the Internet has in several cases led to gains in products affecting a relatively high proportion of the community (in contrast to the almost complete lack of gains recorded in the African telecentres described above). Thus, in one such case, information from a radio-browsing programme led a villager to devise a new, more effective mosquito coil based on local inputs. In a second case, a radio presenter provided his listeners with information from an Indian web-site about crushing tealeaves, after the information had first been confirmed by local experts (tea being, of course, a crucial part of Sri Lanka's economy). In yet a third example cited by Hughes [9] "new uses for bamboo were introduced to Kothmale after a programme browsed a website in the Asia region and found new crafts using bamboo" (p. 11). Interestingly, these examples also suggest ways in which the developed-country orientation of the Internet can be offset and in the process make this technology more relevant to the specificities of a particular region. In particular, there is much to be gained by searching web-sites in other developing countries within the same region.

What also emerges quite clearly from the anecdotal accounts of the attempts to blend radio with the Internet at Kothmale, is that they influenced other functionings than those usually considered in the literature on well-being in rural areas.[7] That literature tends to focus, for example, on the ability to avoid hunger, ill-health and illiteracy. Ethnologically oriented research on the radio-Internet project, however, suggests that one needs also to consider somewhat less obvious functionings. Several examples, for instance, point to the importance of entertainment, [18] not only in the manner in which information from

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[7] Following the Human Development Index associated with the UNDP.

the Internet is supplied to the community, but also with regard to the content of the information itself. Consider, in connection with the first of these issues,

> "the bilingual magazine programme produced by the station's Tamil announcer [which] uses websites as a point of departure for lively discussions, humour and quote surreal flights of fancy, inserting more serious issues or information, within a highly enjoyable and popular style. This depends on the personality of the announcer, but also on simply using the Internet within the programme event rather than defining the programme rigidly as an internet programme" (p. 46).

With respect to the demand for information, Slater et al. [18] point to the 'huge interest' among women, in issues that pertained to their daily lives; lives that included in an essential way the need to be entertained. In one of the station's magazine-type programmes that 'involved much internet use', for example, topics included cooking and domestic issues, health and horoscopes and other fortune telling techniques, such as parrot divination…. "The importance of horoscopes cannot be overestimated in either Buddhist or Hindu culture, and involved not only women but also men and families as a whole" (emphasis added, p. 48).

Perhaps the most striking and unexpected of the roles that were played by radio browsing, however, is best described by the ethnographic researchers themselves. [18] Thus, in a long but rewarding description they report that:

> "one of the most dramatic uses of internet during our visit fell outside all conventional ideas of radio programming: the announcement of O- and A-level exam results is the focus of huge anxiety and a decisive moment in the biography of individuals and families. It was widely known that the results this year would be posted on the Internet, several days in advance of postal notification (which would have to be sent to headmasters and then passed on to students). For those several days, students relayed their exam numbers to KCRIP by phone or in person: staff would then look up the results and broadcast them over the air … KCRIP received over 800 phone calls and innumerable visits during this period. This might well have been the single most significant ICT intervention in the region, dramatically increasing awareness of the Internet and—most importantly—identifying it with specific practical tasks and information needs. It also strongly identified KCRIP as a specific information conduit, …. Finally—and dramatically—it mapped out a convergence of different technologies and information pathways in people's minds: face-to-face communications and telephone→Internet→radio" (p. 46).

Allowing for the fact that some of these students may well have formed part of less than poor households, the larger point of all these examples is that the functionings deemed relevant by the community, transcend not only income, but also the 'basic' non-income measures—such as literacy, life expectancy and infant mortality—that are the primary focus of the UNDP. The same can be said, one should note, of an ethnographic study that is specifically concerned with the relationships between ICTs in general and poverty alleviation. [19] In particular, what this study finds is that 'Poverty has been understood as a complex condition that involves issues of voice, empowerment, rights and opportunities as well as material deprivations. The poor people involved in the [ICT] initiatives have

themselves defined poverty in very broad and diverse, terms, and in very locally-specific ways'. (p. 89, emphasis added)

The conclusion to which we are led, then, is that ethnographic research lends support to the need for a broad-based, multidisciplinary view of relevant functionings, as advocated by Sen. By the same token, this line of research casts doubt on the assumption that preferences are given and unchanging, an assumption that lies at the heart of traditional consumer theory, on which welfare economics relies so heavily.

5. Conclusions

Traditional welfare economics and Sen's notion of functionings are two alternative modes of thinking about the influence of the Internet on poverty in developing countries. And underlying these alternatives are strikingly different theories of consumer behaviour, one being the familiar utility maximizing model found in most textbooks on micro-economics, and the other diverging from that approach on almost all dimensions of the subject (as shown in Table 1 above). It follows, therefore, that one's preference between the welfare economics and the functionings approach will heavily depend on how the elements contained in the Table are evaluated. Our argument in favour of the latter is made in two (distinct but related) stages. In the first, the case is argued in a general context, unrelated to the role of information technology in general and the Internet in particular. The second stage is then concerned to advance the argument in the specific context of the impact of the Internet on the poor in developing countries.

At each of these stages, we focus on two specific assumptions that are not only important in themselves, but which also divide the two approaches to consumption as starkly as possible. One such assumption concerns the point at which the benefits of consumption are thought to occur. In particular, whereas traditional welfare economics assumes that this occurs at the point of purchase or use, the functionings approach is concerned precisely with what occurs after that point. In making a case in favour of the latter view, we showed just how large the differences in benefits derived from the Internet can be, depending on the context in which it is applied (as was shown to be no less true of another product area, namely, medicinal drugs). For this purpose, a comparison was made between foreign-aid telecentres on the one hand and a well-known example of blending radio with the Internet in Kothmale, Sri Lanka, on the other.

The second assumption concerns the difference in methodologies used by the two approaches in evaluating the impact of the Internet (and other ICTs) on poor (typically rural) communities. In particular, the mono-disciplinarity of traditional welfare is contrasted with the wide range of disciplines that a functionings approach might require. Just as medical information is required to assess the impact of medicinal drugs on the health functionings of different individuals (as shown in Table 2), so too, we argued, is an ethnographic approach needed to identify the often subtle changes in functionings that accompany the introduction of the Internet in a local community. These changes, as illustrated in the Kothmale project, would be all but invisible to someone conducting a standard welfare economics assessment based on changes in income (which is not to say

that the economics model has no value in such a context; the point is rather that other disciplines are also needed).

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