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The Design of the Digital Inclusion for Disabled Persons Index (DIDPI)

Introduction

While establishing the Global Initiative for Inclusive ICTs, the individuals involved recognized that we need some way to know whether we are making progress or not over time. To that end, we wish to develop an index that will be a measure of the extent to which different countries are promoting and achieving access to and use of digital information and communications technologies by those with different disabilities. Because we seek a means for evaluation, the index is also a tool with which to benchmark success by each country towards the goal of relatively unimpeded access and use. We call this measure the Digital Inclusion for Disabled Persons Index (DIDPI). This chapter describes the design of the DIDPI.

The design process contains four steps. They are:

1. Preliminary, conceptual design of the index and its components
2. Correct, and where appropriate, expand upon the preliminary design
3. Identify the information sources that can provide empirical underpinnings for the components of the index
4. Adjust the design to be consistent with the available data

Preliminary Design

I start by outlining the preliminary design of the DIDPI. I should emphasize that this first step is an ideal design. It is a design containing the things we would like to include and measure. Limitations in the availability of data for creating the index will result in the actual measure being made up of only a portion of what we might like. Nevertheless, this

first step is useful because it pushes us to carefully consider what we are really trying to measure. Let us begin by considering the *types* of things we would like to measure.

First, we must consider legislation. We want to include that because the existence of legislation creates pressure for initiative and progress in assuring that a disabled person can access and make use of ICTs. If a law specifies that such access must be made possible, that act sets in motion a series of actions in different organizations such as government bureaucracies or corporations to be in compliance with the law. The presence (or absence) of laws and the range of activities they encompass is surely something we would want to know. The index would thus (ideally) contain a measure of the amount of legislation in a country (or subunit) that enhances the degree to which the disabled can access and use ICTs. The amount of legislation would encompass the number of laws, the range of people they encompass, the range of activities they encompass, and the degree to which they contain measures to ensure that access and use.

Second, we must consider the regulations promulgated to implement the legislation. We want to know what has happened in terms of turning the legislation into actual regulations because the existence of regulations increases the likelihood the mandates of the legislation will be implemented. The index would thus (ideally) contain a measure of the degree to which the legislation is augmented by regulations. The degree of augmentation would consist of the percentage of laws that are reflected in regulations, the degree to which the regulations are accompanied by incentives or sanctions, and the degree to which the regulations match the intent of the legislature.

Third, we need to know about the enforcement of laws and regulations. The effect of laws and regulations greatly diminishes if there is no enforcement. Measuring this is, of course, difficult, but it should be possible to garner a rough sense of the degree of enforcement such as: high, varying, little, or none.

Fourth, we need to know the extent to which voluntary actions are being taken to increase access and use. This includes private initiatives by corporations such as General Electric

to make their websites more user-friendly. We want a sense of the extent to which social groups or organizations are doing those actions for reasons other than government compulsion. This, of course, is also difficult to measure, especially because there are likely several small organizations undertaking initiatives. Perhaps the best we can do is count the number of organizations. A better measure would also include the combined budgets directed towards increasing access and use of ICTs by the disabled. Even better, we should want to include a measure of the collaboration between different groups and the establishment of voluntary standards that may evolve into official standards.

Fifth, we would benefit from a sense of the degree to which the government and others encourage “best practices” amongst organizations. We want to know what kinds of incentives does the government or some other kind of entity such as a foundation establish such that people and organizations would try to think of, implement, and share better ways to increase access and use. A measure of this would include the awards and rewards provided and support for the vehicles by which good practices can be disseminated.

Sixth, we also need to have a grasp of the availability of appropriate ICTs. If disabled persons cannot get access to or cannot afford ICTs they can use, the actions captured in the preceding components of the DIDPI will be for naught. The Digital Opportunity Index (DOI) of the International Telecommunication Union and the Ministry of Information and Communications of the Republic of Korea has been designed to encompass two dimensions of availability: infrastructure and opportunity (<http://www.itu.int/osg/spu/statistics/DOI/>). Infrastructure in turn consists of a network infrastructure and a device infrastructure. The network infrastructure consists of the hardware for connecting the different parts of the network (cables or wireless) and the rules for how that hardware works together. The device infrastructure consists of the devices people use to access the network such as computers or cellphones. Opportunity consists of affordability and accessibility. Affordability is measured in terms of cost to the user, and accessibility is measured in terms of the geographic coverage of ICTs. The

DIDPI should follow the DOI design although the variables used must differ somewhat as they should be oriented towards the degree to which disabled persons are affected.

And finally, we need to measure the actual use of ICTs in light of the activities done with respect to the preceding components. The DOI captures this through its utilization dimension. Utilization in turn consists of usage and quality. Usage is the level of use, and quality pertains to the extent to which users can take full advantage of the ICTs. Again, the DIDPI should follow the DOI's lead, with different variables to encompass the circumstances of the disabled. I should note that we must be sensitive to the breadth of disabilities incorporated when making these measures.

In summary, the preliminary design includes:

- Legislation asserting steps shall be taken
- Regulations to implement legislation
- Enforcement of regulations
- Voluntary actions being taken
- Encouragement of "best practices"
- Availability of appropriate ICTs
- Usage rates of those ICTs

From that starting point the question then becomes, how do we actually create a collectable and communicable DIDPI?

Correcting and Augmenting Preliminary Design

The first step is to conduct a survey to determine the adequacy and feasibility of the preliminary design. We want to know what things to fix in the preliminary design in terms of the variables we would like to have in it. We also want to know how to extend the design from the conceptual variables to the empirical foundations of those conceptual variables. In order to get this information, we need to ask in the survey: what are the most important concerns of the different communities of disabled persons with respect to achieving digital inclusion? What are the things that change (the variables) that we should try measure? What are the readily available information sources? If we can get

those answered, we can get a good sense of how the preliminary design should be changed and, perhaps more importantly, how large a subset of the dimensions and variables proposed in the previous section can at this time be measured or gathered. It is very likely that the actual index will be a modest subset of the preliminary design.

To that end we did a pre-survey of invited participants to a global forum on access and use of ICTs by the disabled held at the United Nations in late March 2007. The goal of the pre-survey was to determine from a modest sample of knowledgeable individuals whether the questions in the survey would elicit from the broader community of concerned individuals and groups the information we need and want to make the DIDPI. The responses indicated the survey questions would perform that task.

Fifteen of the individuals in the pre-survey also responded directly to the survey questions. Their answers verified the basic soundness of the preliminary design. For example, the variables they suggested fell within the categories specified in the preliminary design. One individual's suggestion for a variable defined by "the occurrences of constrictive or optionally prescriptive verbs in laws' texts ("must" versus "can")" is a plausible component of the higher-level concept "the degree to which they [laws] contain measures to ensure that access and use [of ICTs by those with disabilities]". That concept is in turn a component or dimension of the even higher-level concept "the amount of legislation" defined earlier that would be the measure of the legislative dimension of digital inclusion for disabled persons. If a law specifies that some action must be taken as opposed to can be taken, that choice of word signals the legislature's intent that action will be taken to meet the goals of the legislature. That clear statement of intent should increase the likelihood that action will be taken. A count through legislative documents, especially bills, regarding an issue pertaining to access and use of ICTs by disabled persons, for instances of the word "must" as opposed to some other word in the context of specifying actions being taken, would be one way to get at that information.

The idea for such a variable as proposed by that individual is a perfect example of how this project can benefit from the input of others. That individual identified something that varies across cases, can at least in principle be measured, and has substantive meaning. Those are fundamental properties of any good indicator.

As expected, the suggested variables did not encompass all of the higher-level concepts. Fortunately, we can expect that the questionnaire, with a larger survey sample, could greatly increase the number of proposed indicators or variables that could serve as good measures of the hard-to-directly-measure, higher-level concepts such as “a measure of the degree to which the legislation is augmented by regulations.” Such a survey should be undertaken.

Identify Information Sources

What we most sorely lack at this point are appropriate information sources to make the index. Respondents to the pre-survey identified some, but we will need many more in order to find indicators that can represent the variables in the index. Our hope is that as the larger survey respondents identify information sources, we learn of more variables for which we can obtain an empirical referent. Namely, we learn which variables we can find indicators for beyond those we may already know. What we can hope for is that there could be people out in different countries that say, “Oh yeah, we have an NGO that prepares reports about what’s going on with respect to those issues. This is their web address.” or that a government statistician could say, “We have that information. We will make that available.”

Adjust the Preliminary Design

Knowledge of what is available at different levels of effort to acquire shapes which indicators (their data) are collected. This knowledge typically whittles down (severely) which variables that comprise the digital inclusion for displace persons concept actually become part of the structure of the calculated index. The goal is to have an index that

brings into account what can we actually assemble that comes as close as we can—within our constraints—to the preliminary or ideal design. There is a gap between what you would like to have and what you can actually do.

Beyond the Design

After the design effort, the next step is the acquisition and assembly of data into the index. That requires hard work and attention to detail, but it is relatively straightforward. The hardest part after acquiring the data is attempting to ensure that the measures obtained from different official publications, and reports and assessments by non-government organizations are as compatible and comparable as possible. After the index has been created, we can then generate a secondary measure of the gap between the actual and desired levels of success that will be derived from the DIDPI. In this way we can get a sense of where we are compared to where we want to be. The last step will be the preparation and documentation of what it is about and the delivery of the initial version of the data to the G3ICT. A summary of those steps follows.

Plan for Design and Implementation

1. Survey to learn the right questions to ask
2. Second survey to learn:
 - What are the most important concerns
 - What are the things that change (the variables) that we should try measure
 - What are the readily available information sources
3. Design structure of DIDPI version 1.0
4. Acquisition and assembly of data into DIDPI
 - Official publications
 - Reports and assessments by NGOs
 - A secondary measure of the gap between actual and desired levels of success
5. Preparation of DIDPI documentation and delivery of DIDPI version 1.0 data to G3ict

The next step is to conduct the larger, more inclusive survey.