ICT IN BRAZILIAN NON-PROFIT ORGANIZATIONS

– CAPABILITY APPROACH-BASED INDICATORS IN ORGANIZATIONAL SETTINGS

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Abstract

As a result of the rapid dissemination of new information and communication technologies (ICTs) in society, several researchers have observed opportunities for new means of citizen engagement through ICT use, in particular when the use is mediated by non-profit organizations. However, an opportunity remains to develop more systematic studies on the adoption of ICTs by non-profit organizations. Studies in the domain, which have often been disconnected from the development debate, have mostly been carried out in developed countries. This paper aims to operationalize the capability approach (CA) conceptual framework, as proposed by Amartya Sen, for the analysis of the data from the survey on ICTs in non-profit organizations from the Brazilian Internet Steering Committee (CGI.br) that was conducted by the Regional Center for Studies on the Development of the Information Society (CETIC.br) in 2013. Although several infrastructural constraints hinder the use of ICTs, this paper indicates the importance of contextual considerations (such as organization size, geographic region, and nature of activity) in relation to the perception of positive and negative outcomes (achieved functionings). The use of ICTs for communication is also significantly linked to attitudes toward ICT and the perception of outcomes in non-profit organizations.

Keywords: ICT for development, capability approach, non-profit organizations

1. Introduction

The study of the social implications of information and communication technologies (ICTs) for individuals and organizations has elicited interest beyond the specialized field of applied computing; it has garnered attention from areas such as organizational studies, sociology, and anthropology [Avgerou et al. 2002; Ciborra 2002]. The existing

research initiatives also coincide with the growing number of ICT4D (information and communication technologies for development) projects that assess socioeconomic impacts, as opposed to uptake, availability, or readiness [Heeks and Molla 2009].

The interdisciplinary nature of this research area has certainly led to a growing number of studies that explore the combination of development theories and the study of the socioeconomic impacts of ICTs [Heeks and Molla 2009]. One of the most recent debates in this field is related to the operationalization of the capability approach – CA [Sen 1999], used as a reference for the assessment of ICT4D projects. The capability approach is a broad normative framework for the evaluation and assessment of individual well-being and social arrangements, the design of policies, and proposals about social change in society. According to Robeyns [2005], it can be used to evaluate several aspects of people's well-being, such as inequality, poverty, the well-being of an individual, or the average well-being of the members of a group [Robeyns 2005].

While opposing the utilitarian theories of development, but at the same time maintaining some degree of normativity [Garnham 1997], an increasing number of studies have established associations between the capability approach (CA) and its interface with the deployment of ICTs. Although micro-level-focused evaluation has prevailed [Kivunike et al. 2013], the CA has also inspired the development of macro-level indicators, such as the well-known Human Development Index (HDI).

This paper argues that non-profit organizations are important collective actors that support citizen engagement – taking the "latter-day Tocquevillian" view that formal and informal association socializes citizens for democratic participation [Clemens 2006]. For this reason, ICT adoption by such organizations can be seen as an important axis of the ICT4D debate. In operationalizing a capability-based analysis, we also expect to offer an objective frame of what we consider "development", understood as "an integrated process of expansion of substantive freedoms" [Sen 1999: 9]. Thus, a more precise definition of development is very important, taking into consideration that the ICT4D field has demonstrated "an impoverished understanding of development" [Heeks 2010: 634]. Heeks [2010] argues that few of those working in this sub-field are based in development studies departments, reinforcing the technocentric tendency of the ICT4D field. "Recognition of the fragile thread between development studies and development informatics has led to calls in recent years for a stronger connection. This is slowly starting to be seen, with a few works particularly conceptualising development around the livelihoods and capabilities approaches" [Heeks 2010: 634].

This paper is supported by a comprehensive review of the existing literature on the use of ICTs in non-profit organizations. The capability approach [Sen 1999] is particularly relevant in this context. The paper focuses on the operationalization of this model through field studies on ICT4D. Finally, statistical tests derived from the theoretical debate are discussed to identify the following hypotheses:

1. Non-profit organizations' attitudes toward ICTs vary according to contextual variables or how contextual factors (e.g., core activity, regional location, and size) influence the conversion of commodities into achieved functionings, as discussed on page 10;
2. Non-profit organizations' attitudes toward ICTs vary according to the presence of ICT goods and services. There is a correlation between specific ICT-related commodities (e.g., presence on websites, social networks, education and training activities, and online services) and the perception of the impact of ICTs within organizations, as presented on page 13.

The analysis is based on the data collected in the CGI.br's survey on ICTs in non-profit organizations, conducted by CETIC.br in 2013. Overall, the aim is to offer a practical contribution to ICT4D studies, presenting methodological implications for the use of the CA in developing countries. This paper also seeks to illustrate the strengths and limitations of this approach for the analysis of quantitative data at the organizational level, which can generate important inputs for the implementation and evaluation of public policy and discussions about e-democracy in general.

2. ICTs in Non-profit Organizations

Due to the rapid dissemination and adoption of ICTs across the globe, several researchers have identified opportunities for a new means of citizen engagement. This perspective is made clear, for instance, through the concept of "e-democracy" or the way in which ICTs can encourage "the expression and elaboration of urban problems by local citizens themselves, the self-organization of local communities, the participation in deliberations by those directly affected by them, the transparency of public policies, and their evaluation by citizens" [Lévy 1999: 186]. This perspective is also noted by Castells, who points out that the expansion of new technologies promotes increased monitoring of local governments, a new means of citizen participation [Castells 2010a]. What is more, the Internet continues to offer opportunities for participatory forms of democracy on an unprecedented scale [Mansell 2012].

According to these authors, another important characteristic of the new forms of citizen participation and engagement is a lack of institutionalism or, in other words, the fact that they do not necessarily form within pre-existing organizations, introducing, from the outset, an alternative social logic, which is distinct from the principles of performance around which dominant institutions are built [Castells 2010b]. Decentralization and global articulation can also give rise to new social movements, such as the environmentalist movement, the women's rights movement, and anti-globalization movements [Castells 2010a]. Although the new scenario seems to be less institutionalized, Norris [2001] argues that a new channel of two-way communication, the Internet, can help to "strengthen and enrich the connections between citizens and intermediary organizations including political parties, social movements and interest groups, and the news media, as well as with public officials and agencies of local, national and global governance" [Norris 2001: 2].

The Internet also enables a form of engagement whereby citizens can increase their autonomy by creating their own means of expression, thus making them less dependent on traditional mass media [Benkler 2006]. As highlighted by Castells [2010a], access to online information and communication through computers creates an opportunity to enhance political participation and horizontal citizen communications.

> Indeed, on-line information access and computer-mediated communication facilitate the diffusion and retrieval of information, and offer possibilities for interaction and debate in an autonomous, electronic forum, bypassing the control of the media. Indicative referendums on a variety of issues may provide a useful tool, when used carefully without yielding to the oversimplified frame of referendum politics. More importantly, citizens could form, and are forming, their own political and ideological constellations, circumventing established political structures, thus creating a flexible, adaptable political field. [Castells 2010a: 415]

However, despite the potential of this approach – and due to the importance of applied research that moves beyond the assumption of natural beneficial outcomes from the use of ICTs – an opportunity remains to develop more systematic studies on non-profit organizations' adoption of ICTs, which offer an important means of citizen engagement. Some management studies have sought to assess the impacts of ICTs on the organizational routines of non-profit organizations [Bach and Stark 2002; Burt and Taylor 2000; Denison and Johanson 2007; Surman and Reilly 2003]. They have acknowledged the potential of new technologies for internally reshaping organizations, reconfiguring their relationships with networks of organizations, and redefining how they relate to citizens, suppliers, clients, and governments [Burt and Taylor 2000]. NGOs are beginning to see interactive technologies as an important means for expanding their social interaction networks, increasing their breadth, and promoting new connections and relationships between numerous dispersed social players [Bach and Stark 2002].

Empirical quantitative studies on ICTs in non-profit organizations have also been undertaken in the United States [Forster et al. 2006; Geller et al. 2010], the United Kingdom [Burt and Taylor 2000], Spain [Oneworld Spain 2002], and New Zealand [Zorn et al. 2011]. Geller and her colleagues [2010] at the Center for Civil Society Studies at the Johns Hopkins Institute for Policy Studies, in a study of 443 non-profit organizations in the United States, found that most institutions already use ICTs to some extent for their administrative tasks, in their projects, and in their service offering. Most organizations, however, are not satisfied with how they use integrated technologies to enhance projects and services and acknowledge that they could do more. This study also shows that a lack of funding (92%), a lack of expertise (71%), and a lack of time (85%) are the main barriers preventing organizations from taking full advantage of ICTs.

Another periodic study, related to the American context, is the non-profit technology survey, conducted by the Bayer Center for Non-profit Management at Robert Morris University, which shows that the most significant challenge in using ICTs to their full potential is insufficient funding [Forster et al. 2006].

Despite the relevance of these initiatives, they have mostly been carried out in developed countries and, in most cases, have not investigated the characteristics that are specific to non-profit organizations in developing countries. Furthermore, these studies are mostly disconnected from the development theory debate encompassing a variety of social science disciplines and approaches to discuss social and economic development.

By using the capability approach (CA) to support the analysis of the use of ICTs in non-profit organizations, this paper aims to move beyond the prevailing discussion on access and use [Garnham 1997: 32], thereby furthering the debate on development as the expansion of human capabilities. In this sense, the CA can generate relevant outcomes in the study of ICT adoption by non-profit organizations, since it contributes to a broader view of organizations' actual results as well as the expansion of organizational capabilities. As "a broad approach that views development as an integrated process of expansion of substantive freedoms", the CA "permits simultaneous appreciation of the vital roles, in the process of development, of many different institutions", including "civic institutions" [Sen 1999: 9].

3. The Capability Approach and ICT

The capability approach (CA) is based on the need to evaluate not only "realized functionings" (what a person actually does), but also the "set of capabilities" that is available to a person (his/her real opportunities) [Sen 1999]. When comparing the CA with other evaluative approaches, especially utilitarian theories [Robeyns 2005], it is important to remark that the concept of "capability", as used by Sen, differs from its everyday sense, which usually refers to trained potentials, including skills, abilities, and aptitudes [Zheng and Stahl 2011].

Taken as freedoms to achieve functionings [Sen 1999], capabilities, as the expansion of opportunities of choice, are both the aim and the principal means of development [Kleine 2011]. In this sense, Sen distinguishes between "well-being freedom" – the freedom to have a good life – and "agency freedom" – the freedom to achieve what one has reason to value (capability), whether at the personal, community, or any other level [Grunfeld et al. 2011]. Due to the agency component, the CA highlights the "'multidimensionality' of wellbeing and sees people as active agents shaping their own lives" [Oosterlaken and Hoven 2011: 65].

Individuals and communities decide how to define which capabilities are important and, subject to external constraints, how to translate them into functionings [Grunfeld et al. 2011]. Beyond the evaluation of people's capability sets, one must consider external constraints, which are mainly expressed by the context in which economic production and social interactions take place [Robeyns 2005]. This aspect reflects a more normative characteristic of the CA, in which Sen [1999] identifies five types of instrumental freedoms: 1. political freedoms, 2. economic facilities, 3. social opportunities, 4. transparency guarantees, and 5. protective security. However, the author does not offer an actual list of capabilities within the five instrumental freedoms [Vaughan 2011].

From an evaluation standpoint, this approach suggests that there is a need for indicators that reflect what people may or may not perform in practice, instead of ones that simply measure people's access to ICT. Among the impacts related to the ICT4D debate, the CA can provide a non-deterministic view of technologies, opposing the idea that widespread acquisition and use of ICTs produce improvements that apply to universal criteria. Hence, as argued by Zheng [2007], the combination of individual and social factors must be taken into consideration in the assessment of development initiatives. Hence, physical access to ICTs would not be deemed sufficient, as it is not an end in itself, but rather a commodity (goods and services) or the means through which someone can achieve valued capabilities and functionings [Grunfeld et al. 2011]. Grunfeld [2011] associates commodities with ICT access: "Two individuals may have access to the same commodity, say a telecentre where services are provided free of charge and therefore affordable for all from a monetary perspective, but one of them may lack capability to benefit from it due to insufficient literacy skills. The differences in capability would result in different achieved functionings, should the ICT-literate person apply his or her literacy skills. Having access to ICT is a commodity, knowing how to use it, represents a capability and applying agency to use it; say to send an e-mail, is a functioning" [Grunfeld 2011: 65].

Due to the highly interdisciplinary nature of the CA [Robeyns 2005], the debate on the use of this approach when assessing ICT use has generated both theoretical and conceptual points of view – as seen in the special issue of *Ethics and Information*

Technology [Birdsall 2011; Coeckelbergh 2011; Kleine 2011; Oosterlaken and Hoven 2011; Toboso 2011; Zheng and Stahl 2011].

Numerous qualitative empirical studies and some quantitative empirical experiments have also been developed with the CA. Most of these studies are in-depth narrative reports, "characterized with lots of data which are well-suited for a micro level appraisal of how specific ICT4D projects contribute to the development (social and economic) of individuals or communities" [Kivunike et al. 2013: 6]. Qualitative approaches, such as case studies, have been applied to several project evaluations [Byrne and Sahay 2007; Grunfeld et al. 2011; Kleine 2013; Mansell 2006; Vaughan 2011; Zheng and Walsham 2008].

As the CA is amenable to both quantitative and qualitative studies [Heeks and Molla 2009], there are some quantitative survey applications that tend to consider the impacts of actions related to the use of ICTs mostly at the individual level [Alampay 2006; James 2006; Musa 2006; Olatokun 2009; Thomas and Parayil 2008; Tiwari 2008]. However, there are opportunities to use the CA concepts in the organizational context, as proposed by this study. This paper argues that the non-profit sector plays an important role in mediating civic engagement, especially when it comes to communication and public relations strategies envisioning social mobilization.

4. The Conceptual Framework

The framework provided by the CA is broad and, given its methodological vagueness [Zheng and Walsham 2008], requires additional efforts for its operationalization. Some ICT studies have developed conceptual frameworks to support this kind of analysis, taking into account specific aspects such as livelihood [Gigler 2011], choice [Kleine 2013], or even associations with theoretical frameworks, such as institutional theory [Bass et al. 2013].

Because of the emphasis on both individual and social determinants in defining "capabilities", the approach proposed by Sen [1999] is considered difficult to implement in applied quantitative research. Recent efforts to define indicators' dimensions to measure ICT4D with the capability approach have received attention in the field [Kivunike et al. 2013; Senne et al. 2013].

The first challenge in the creation of a conceptual framework based on the CA involves considering the contextual factors that influence the way in which the goods and services accessed by an individual or group become capabilities that are taken as an appropriate repertoire for choice.

Another key aspect of effectively reaching a functioning based on choice opportunities involves individual or collective agency. Therefore, the major challenge is to consider specifically the aspects that each group or individual values. If individuals, or groups of individuals, are able to decide what they want to achieve as a development outcome, development remains an open-ended proposition and, because of this, it is "hard to measure by a priori impact measures" [Kleine 2011: 125].

Given the previous experience of CA application in the field of ICT4D and our focus on capabilities at the organizational level, ICTs are considered commodities that can generate new capabilities while expanding the repertoire of choices available to organizations. Thus, the following central concepts will be considered for this study:

- *Commodities*: These are important goods and services to the extent that their features allow people to "do" and "be" what they have reason to value [Robeyns

2005]. Many scholars consider ICT access a commodity in itself [Heek and Molla 2009]. The association of commodities and attitudes toward ICTs (as achieved functioning) is presented during the discussion of hypothesis 2, on page 13;

- *Conversion Factors*: The generation of capabilities based on commodities is influenced by a set of conversion factors, meaning personal (physical conditions, literacy, gender, etc.), social (role of women, religion, role of laws, etc.), and environmental factors (climate, infrastructure, resources and public goods, etc.) [Robeyns 2005]. Aspects such as literacy, telecommunication infrastructure, and government censorship might be considered, as well as other social aspects – "a telecentre will create different capabilities for, say, a woman in a rural area compared to a man in an urban area" [Heek and Molla 2009] – when considering access to ICTs. The association of conversion factors and attitudes toward ICTs (as achieved functioning) is presented during the discussion of hypothesis 1, on page 10;
- *Capabilities*: These refer to "the alternative combinations of functionings that are feasible to her [a person] to achieve" or "the substantive freedom to achieve alternative functioning combinations" [Sen 1999: 75].
- *Choice*: The "personal choice to select from the capabilities available, subject to personal preferences, social pressure and other decision-making mechanisms" [Zheng and Walsham 2007: 4]. According to Kleine [2013], the majority of studies do not directly measure capabilities, but rather map or measure the achieved functioning that results from an individual's choices as a proxy for the capabilities [Kleine 2013].
- *Achieved Functionings*: These reflect the various tasks that people are actually able to perform [Sen 1999: 75]. "The distinction between achieved functionings and capabilities is between the realized and the effectively possible; in other words, between achievements on the one hand, and freedoms or valuable options from which one can choose on the other" [Robeyns 2005: 95].

Considering the central concepts listed above, the framework presented by Zheng and Walsham [2008] is taken into consideration based on Robeyns's [2005] study, as shown in Figure 1.

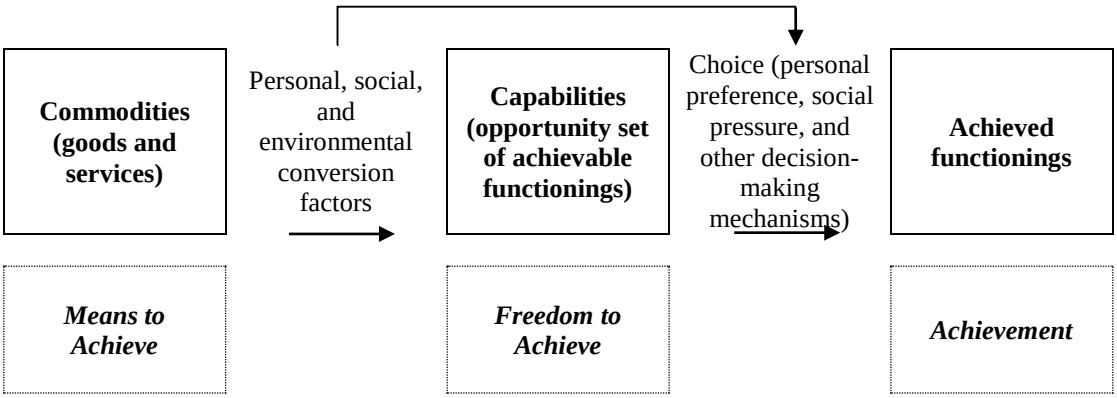

Figure 1. Adapted from Zheng and Walsham (2008)

The framework's simplicity offers several important advantages. It supports a clear definition of the dimensions of indicators associated with each concept. By

considering both social and structural macro-level indicators, this reference broadens the debate on the role of ICTs in a development context. By highlighting the role of the expansion of the repertoire of choices, it also offers new evaluation parameters for ICTs' impacts, not only for improving well-being but also as an empowerment tool.

On the other hand, the framework's linear nature is a disadvantage. Due to its sole dimension, it pays little attention to the dynamics between the components. Sen [1999] points out that a two-way relationship is central to the CA, since, for instance, capabilities can be enhanced by public policy, but the direction of public policy can also be influenced by the effective use of participatory capabilities by the public. Despite its non-dynamic structure, this study aims to evaluate the association of variables in both ways, without considering causal relationships.

Additionally, critics have pointed out that the capability approach views well-being strictly from the perspective of individuals, since groups have received relatively little attention [Stewart 2004]. The need to incorporate a perspective of "collective capabilities" into the CA is also underscored by Evans [2002]:

> Organized collectivities – unions, political parties, village councils, women's groups, etc. – are fundamental to people's capabilities to choose the lives they have reason to value. They provide an arena for formulating shared values and preferences, and instruments for pursuing them, even in the face of powerful opposition. [Evans 2002: 56]

However, the perspective of collective capabilities may overlook the significant heterogeneity that may occur in groups – processes often affect a group's capabilities differently, as people may also value the effects of group participation differently [Alkire 2005]. Despite this divergence, this article proposes to apply the capability approach lens to undertake an evaluation in an organizational context. It is less important, in our case, to assess how each individual in these organizations appropriates the opportunities generated by ICTs than to assess how the attitudes regarding ICTs are characterized in organizations that make use of such technologies.

5. The Research Method

This paper makes use of the data collected in the survey on ICTs in non-profit organizations that was launched by the Regional Center for Studies on the Development of the Information Society (CETIC.br) in 2013 [CGI.br 2014].[1] The survey's conceptual framework is based on the United Nations' Statistics Division's and the Johns Hopkins University's *Handbook on Non-Profit Institutions in the System of National Accounts* [UN 2002]. This ensures the international comparability of its results. Based on this conceptual framework, the non-profit organizations to be analysed are defined as:

- Private and therefore not integrated with the state apparatus;
- Non-profit, that is, organizations that do not distribute eventual surpluses among owners or directors and for which the primary motivation for being in operation is not to generate profit – this might very well be generated, as long as it is reinvested in core activities;

[1] More information on the methodology and sample design is available at: Comitê Gestor da Internet no Brasil – CGI.br. 2014. *ICT Nonprofit Organizations 2012: Survey on the Use of Information and Communication Technologies in Brazilian Nonprofit Organizations*. Coordinator Alexandre F. Barbosa. Comitê Gestor da Internet no Brasil, São Paulo. Available at: http://cetic.br/media/docs/publicacoes/2/tic-osfil-2012-livro-eletronico.pdf

- Institutionalized, that is, legally constituted;
- Self-managed or capable of managing their own activities; and
- Volunteering, which means they can be freely constituted by a group of people, that is, membership or any activity related to affiliation or establishment of the organization is freely decided by partners and founding members.[2]

Another important criterion of the survey on ICTs in non-profit organizations is its exclusion of hospitals and formal education institutions (schools and universities).

There is a high level of heterogeneity among the organizations that were surveyed, regarding their objectives and core activities. What is more, this paper assumes that formal and informal association socializes citizens for democratic participation, which reflects the relationship between the work of these organizations and civic engagement. As stated by Clemens, "the multiple or polyvalent character of these organizations – not denizens of some distinct, internally coherent or homogeneous sector – accounts for their oft-mentioned capacities for mobilization, advocacy, and innovation" [Clemens 2006: 23], which means that non-profit organizations and voluntary associations are "sites of leverage and possibility in politics" [Clemens 2006: 24].

The survey targeted all Brazilian non-profit organizations registered with the Brazilian Institute for Geography and Statistics' (IBGE) Central Registry of Enterprises (Cempre) in 2010, which belonged to the CNAE 2.0 (ISIC 4.0)[3] sectors that were relevant to the survey. Overall, the sample frame contained 389,086 organizations.

Data were collected from October 2012 to March 2013 through structured questionnaires that were specifically directed at the managers or coordinators of 3,546 Brazilian non-profit organizations from different segments across the country. The probability sample was representative of the country's 5 administrative regions (North, Northeast, Center-West, Southeast, and South). Its design was based on organization size (measured by the number of employees) and type of activities (education and culture, defence of rights, and religion, among others). The questions addressed topics such as organizational profile, ICT infrastructure, ICT use, and ICT skills.

Initially, cross-tabulations between the variables of interest were considered in the descriptive analysis. A 95% confidence interval was calculated in each cell to identify significant differences among the items. To pursue further analysis and address this paper's hypotheses better, Spearman's correlation coefficient[4] was calculated for the key analysis variables, which means that the aim of the test was to identify the relationship between two variables, which does not imply causation between them.

[2] Based on: *As Fundações Privadas e Associações sem Fins Lucrativos no Brasil – 2010*. Available at: http://www.ibge.gov.br/home/estatistica/economia/fasfil/2010/

[3] CNAE Version 2.0 is the National Classification of Economic Activities, which is the classification officially used in the production of statistics by type of economic activity, fully compliant with the International Standard Industrial Classification (ISIC) Version 4.0.

[4] Spearman's correlation coefficient is a non-parametric measure of statistical dependence between two variables. Its interpretation is similar to Pearson's coefficient, but there is no requirement for normality to measure the strength of a monotonic relationship between paired data. The monotonic relationship is stronger when the coefficient is closer to -1 or 1.

6. The Data Analysis

Firstly, the presence of ICTs was seen as a necessary commodity for generating certain capabilities within organizations. Therefore, this study did not aim to discuss how the presence or absence of these commodities affects the performance of the organizations. Additionally, the focus was not on the intrinsic characteristics of the commodity that could affect their effective use, for example the speed of the Internet connection or the characteristics of the devices used to access the Web. Among the organizations interviewed for the study, 72% reported making use of the Internet in the 12 months prior to the survey. Although most Brazilian non-profit organizations use the Internet, only 65% of them have their own computers, which indicates that many organizations depend on public access centres (such as telecentres) or the loan of employees' devices.

It is also worth noting that only 27% of the organizations have their own website, while 37% maintain an Internet presence through social networks, blogs, or forums. Of the organizations, 35% use the Internet for education and training purposes, while 43% offer some types of online service to beneficiaries or the general public, as presented in Table 1.

Presence of commodities as declared by interviewees	Yes (%)
Organizations that own computers	65
Organizations that use the Internet	72
Organizations with a website	27
Organizations on the Web through social networks, blogs, or forums	37
Organizations using the Internet for education and training	35
Organizations offering online services to beneficiaries or the general public	43

Table 1. *Commodities*: Descriptive frequency of infrastructure and ICT use indicators (percentages of the total organizations)

Considering the overall scenario of the presence of ICTs in organizations, as presented above, the following discussion relies on the importance of two central aspects for the application of the CA in non-profit organizations: (1) the influence of conversion factors for defining achieved functionings and (2) the correlation between commodities and achieved functionings.

6.1. The Influence of Conversion Factors

By presenting contextual data on the organizational environment, it is possible to highlight the way in which the outputs generated by the use of ICT, as a commodity, result in the expansion of the list of choices available to a particular organization, which leads to the following hypothesis:

Hypothesis 1: Non-profit organizations' attitudes toward ICTs vary according to contextual variables. Considering CA terminology, conversion factors, such as size, region, and main activities, might influence the achieved functionings.

Only organizations that used the Internet (72% of the total sample) were selected. "Achieved functioning" was considered as a specific group of variables that indicate perceived impacts on ICTs; these were dichotomized to create a group of high agreement with certain attitudes and a second group in which the agreement rate was lower or non-existent. The list of attributes was built on aspects that are often covered in the literature on outcomes related to the use of technologies, such as internal and external communication, internal management, team training, and the use of financial resources [Forster et al. 2010; Geller 2010]. Although the creation of structured outcome lists is an imperative for this kind of quantitative survey, we chose to maintain some degree of agency in the hands of these organizations to value such attributes or not. The variables that referred to attitudes toward ICTs (achieved functioning) considered the organization managers' or coordinators' responses on how ICTs contribute to the following aspects (see the Appendix):

- Increasing the organization's popularity;
- Improving the internal communications;
- Increasing the organization's efficiency;
- Improving the organization's outputs;
- Improving the team's education and training;
- Reducing the organization's expenses;
- Increasing the fundraising revenue.

The sample's profile stratification variables were considered to facilitate the investigation of conversion factors. Although many other aspects could be related to the way in which organizations convert goods and services into capabilities, central contextual characteristics of the entities were used, that is, organization size, measured by the number of employed persons; geographic location – an important aspect in an extremely diverse country like Brazil; and the end activity of the organizations according to the classification of economic activity (ISIC 4.0). To show a significant difference among the selected items, the 95% confidence interval (CI) for each of the defined profile attributes is provided below (size, geographic region, and activity).

In terms of size, there was a notable difference between organizations that do not employ workers (only working with volunteers) and organizations with more than 10 employees. The difference was significant for the following items: "increasing the organization's popularity", "increasing the organization's efficiency", "improving the organization's outputs", and "improving the team's education and training" – as shown in Tables 2 and 3. However, there were no significant differences regarding the following items: "improving the internal communications", "reducing the organization's expenses", and "increasing the fundraising revenue". For the latter items, it is important to highlight that the recognition of ICTs as an effective means of reducing costs and as a fundraising tool was similar for both small and large organizations.

From a geographic perspective, the confidence intervals did not show significant differences between groups, with the exception of organizations in the North/Center-West and those in the South with regard to "improving the organization's outputs". In this case, further analysis is necessary with a greater level of disaggregation to identify better the impacts of geographical locations.

Finally, in terms of the main organizational activities, it should be noted that professional associations and unions value the contribution of ICTs at a higher level, especially for items related to internal management, such as "increasing the organization's efficiency" or "improving the organization's outputs". Organizations that strive to improve development and that aim to defend human rights scored significantly lower than professional associations and unions with regard to issues related to communication (increasing the organization's popularity), which is an important finding since these entities rely on mobilization strategies. The low frequency of religious organizations that consider the use of ICTs for fundraising is also noteworthy. This may be due to the importance of face-to-face donations for such organizations in Brazil.

It is thus possible to conclude that contextual variables are central to explaining the aspects that are valued by the organizations as achieved functionings. Organization size and activity type generated the greatest differences in the results.

			Attitudes toward ICTs (perception of how ICTs contribute to the following aspects)							
			Increasing the organization's popularity		Improving the internal communications		Increasing the organization's efficiency		Improving the organization's outputs	
			Estimated proportion	95% CI	Estimated proportion	95% CI	Estimated proportion	95% CI	Estimated proportion	95% CI
Contextual variables (conversion factors)	Total		0.51	(0.49; 0.54)	0.58	(0.55; 0.61)	0.66	(0.64; 0.69)	0.52	(0.49; 0.54)
	Size	No employees (only volunteers)	0.44	(0.39; 0.49)	0.55	(0.50; 0.60)	0.59	(0.54; 0.64)	0.46	(0.419; 0.52
		1 to 9 employees	0.54	(0.50; 0.58)	0.56	(0.52; 0.60)	0.64	(0.61; 0.68)	0.49	(0.45; 0.53)
		10 or more employees	0.53	(0.48; 0.58)	0.62	(0.57; 0.67)	0.73	(0.69; 0.78)	0.58	(0.54; 0.63)
	Region	North/ Center-West	0.58	(0.51; 0.65)	0.66	(0.59; 0.73)	0.69	(0.62; 0.76)	0.59	(0.52; 0.66)
		Northeast	0.53	(0.45; 0.61)	0.59	(0.51; 0.67)	0.66	(0.59; 0.74)	0.53	(0.45; 0.60)
		Southeast	0.51	(0.47; 0.54)	0.56	(0.52; 0.59)	0.65	(0.62; 0.69)	0.52	(0.48; 0.55)
		South	0.48	(0.44; 0.53)	0.56	(0.51; 0.61)	0.66	(0.61; 0.71)	0.47	(0.42; 0.52)
	Activity	Employer and professional associations and unions	0.61	(0.56; 0.65)	0.60	(0.56; 0.65)	0.73	(0.69; 0.77)	0.61	(0.56; 0.65)

		Education, entertainment, and culture	0.59	(0.54; 0.65)	0.58	(0.52; 0.64)	0.64	(0.58; 0.71)	0.50	(0.44; 0.56)
		Development and defence of rights	0.49	(0.43; 0.55)	0.59	(0.53; 0.65)	0.67	(0.61; 0.72)	0.52	(0.46; 0.58)
		Religion	0.53	(0.47; 0.58)	0.57	(0.52; 0.62)	0.60	(0.54; 0.65)	0.47	(0.42; 0.53)
		Others	0.46	(0.41; 0.51)	0.57	(0.52; 0.62)	0.69	(0.64; 0.74)	0.52	(0.47; 0.57)

Table 2. *Conversion factors*: Contextual variables versus attitudes toward ICTs (percentages and confidence intervals)

			Attitudes toward ICTs (perception of how ICTs contribute to the following aspects)					
			Improving the team's education and training		Reducing the organization's expenses		Increasing the fundraising revenue	
			Estimated proportion	95% CI	Estimated proportion	95% CI	Estimated proportion	95% CI
Contextual variables (conversion factors)	Total		0.40	(0.37; 0.42)	0.42	(0.39; 0.45)	0.25	(0.23; 0.28)
	Size	No employees (only volunteers)	0.31	(0.26; 0.36)	0.39	(0.34; 0.44)	0.23	(0.19; 0.28)
		1 to 9 employees	0.36	(0.32; 0.40)	0.39	(0.36; 0.43)	0.25	(0.21; 0.28)
		10 or more employees	0.50	(0.45; 0.54)	0.47	(0.43; 0.52)	0.27	(0.23; 0.30)
	Region	North/ Center-West	0.46	(0.39; 0.54)	0.47	(0.40; 0.55)	0.29	(0.22; 0.36)
		Northeast	0.38	(0.31; 0.46)	0.43	(0.35; 0.51)	0.26	(0.19; 0.33)
		Southeast	0.40	(0.36; 0.43)	0.41	(0.37; 0.44)	0.25	(0.22; 0.28)
		South	0.38	(0.33; 0.43)	0.41	(0.36; 0.46)	0.23	(0.19; 0.27)
	Activity	Employer and professional associations and unions	0.41	(0.36; 0.45)	0.50	(0.45; 0.54)	0.30	(0.26; 0.34)
		Education, entertainment, and culture	0.40	(0.33; 0.46)	0.40	(0.34; 0.46)	0.27	(0.22; 0.32)
		Development and defence of rights	0.38	(0.32; 0.44)	0.42	(0.36; 0.48)	0.27	(0.22; 0.37)
		Religion	0.40	(0.34; 0.45)	0.41	(0.36; 0.47)	0.18	(0.14; 0.22)
		Others	0.42	(0.37; 0.47)	0.40	(0.35; 0.48)	0.27	(0.23; 0.31)

Table 3. *Conversion factors*: Contextual variables versus attitudes toward ICTs (percentages and confidence intervals)

6.2. The Relevance of Commodities

Assuming the importance of conversion factors, it is also important to take a more detailed look at the relationship between the valued attitudes toward ICTs, as achieved functionings shown in section 6.1, and ICT commodities in a target population, which leads to the following hypothesis:

Hypothesis 2: Non-profit organizations' attitudes toward ICT vary according to the presence of ICT goods and services. Considering CA terminology, achieved functionings are related to ICT commodities.

Although we consider non-profit organizations to be spaces for civic engagement mediation, this paper focuses on activities related to communication and public relations, the ones that enable contact between an organization and its beneficiaries and communities. The data highlight the presence of commodities, such as a web presence and the provision of online services. They are:

- Organizations with a website;
- Organizations on the Web through social networks, blogs, or forums;
- Organizations using the Internet for education and training;
- Organizations offering online services to beneficiaries or the general public.

Firstly, Spearman's correlation coefficient was applied with the aim of investigating the statistical dependence of each pair of selected variables.[5] A strong association among the variables was found, except for the relation between the presence of a website and the perceived improvement of the team's education and training, as shown in Table 4.

[5] Only organizations that had used the Internet in the past 12 months were considered.

		Commodities related to communication and public relations			
		Organizations with a website	Organizations on the Web through social networks, blogs, or forums	Organizations using the Internet for education and training	Organizations offering online services to beneficiaries or the general public
Attitudes toward ICTs (perception of how ICTs contribute to the following aspects)	Increasing the organization's popularity	0.307*	0.312*	0.161*	0.243*
	Improving the internal communications	0.154*	0.175*	0.146*	0.215*
	Increasing the organization's efficiency	0.110*	0.067*	0.155*	0.165*
	Improving the organization's outputs	0.128*	0.129*	0.167*	0.166*
	Improving the team's education and training	0.035	0.116*	0.273*	0.175*
	Reducing the organization's expenses	0.094*	0.070*	0.117*	0.133*
	Increasing the fundraising revenue	0.076*	0.125*	0.126*	0.163*

* Significance level of 0.05.

Table 4. Correlation of attitudes toward ICTs versus ICT commodities related to communication and public relation
(percentages of organizations using the Internet)

The data showed a high correlation between web presence, through websites or online social networks, and the perception that the organization had become more popular in its community. Perceptions more significantly related to communication ("increasing the organization's popularity" and "improving internal communications") were also correlated with offering online services, which also emphasizes the intimate relationship between online services and communication strategies.

Another important correlation was between "improving the team's education and training" and "using the Internet for education and training", which indicates that educational uses for internal or external members are linked to a perception of improvement of staff skills.

Attitudes related to resources ("reducing the organization's expenses" and "increasing the fundraising revenue") were correlated at a lower level with the investigated practices, indicating that access to resources is not necessarily the most crucial aspect for these organizations.

7. Discussion and Conclusion

This paper aimed to provide a methodological contribution to the operationalization of the CA in the study of non-profit organizations. The application of the concepts that are central to the approach, such as *commodities*, *conversion factors*, *capabilities*, *choice*, and *achieved functionings*, offered inputs to the development of hypotheses that move beyond the utilitarian perception of access to ICTs – often exposing the quantitative rankings on the subject.

Variables that measure the perceived contributions of ICTs, as a proxy for organizational values, were used to consider the perspective of the surveyed units, even in cases in which the respondents had to choose from a structured list of aspects, such as communication, management and efficiency, training/education, and income generation. It is important to recognize the limitations of attitudinal questions, since respondents tend to be acquiescent when answering them. Despite this, the results revealed the level of agreement between the items. The data showed a strong correlation between the perception of the impact of ICTs and effective ICT use related to communication and public relations, which may lead to further research questions. Despite the seemingly obvious association between the use of ICTs and attitudes toward ICTs, it should be noted, on the other hand, that a substantial number of organizations with access to ICTs did not declare that they had positive perceptions regarding their ICT adoption, which reinforces the importance of a capability-based assessment.

The application of this approach in organizational studies is an important contribution. Indeed, non-profit organizations are simultaneously a space for the development of substantive freedoms (such as empowerment) as well as a space for obtaining well-being. They play a mobilization and articulation role with regard to issues of common interest. However, these benefits do not occur without access to certain goods and services – ICT among them – and do not generate benefits for all organizations in the same way; hence, there is a need to consider the entities' personal, social, and environmental contexts.

Finally, the concrete evaluation of the expansion of capabilities in each organization depends on the incorporation of the "time" variable. Performing new measurements with a similar sample size should facilitate the generation of indicators for monitoring changes in the sector, which is central when assessing the real expansion of the repertoire of choices available to these social groups.

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Appendix

Description of the indicator "Proportion of organizations according to the perception of the impacts of ICTs":

The question wording for this variable was: "I will read out some activities and would like to know whether in the last 12 months the use of computers and the Internet has contributed a lot, in part, or not at all to carrying them out. The use of computers and the Internet for their organization contributed greatly, in part, or not at all to: increasing the organization's popularity; improving the internal communications; increasing the organization's efficiency; improving the organization's outputs; improving the team's education and training; reducing the organization's expenses; and increasing the fundraising revenue."

More information is available at http://cetic.br/media/docs/publicacoes/2/tic-osfil-2012-livro-eletronico.pdf