USING PHOTO-ELICITATION TO EXPLORE SOCIAL REPRESENTATIONS OF COMMUNITY MULTIMEDIA CENTERS IN MOZAMBIQUE

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ABSTRACT
Ten Mozambican Community Multimedia Centers (CMCs) were investigated by analyzing Social Representations of users and staff members. Photo-elicitation, an underexplored methodological approach in the domain of Information and Communication Technologies for Development (ICT4D), was employed to conduct the study, and a three-step qualitative content analysis was performed on both visual and textual data. Results tend to confirm and build upon outcomes from the existing literature on Public Access Venues (PAVs). Local communities value these centers because they bring social recognition to people working or learning there. The venues are associated with a symbolism that extends from the social recognition of the individual to the development and social inclusion of the whole community, which, because of the presence of the venue, does not feel left behind. In this vein, the study also shows that the importance of CMCs is often not related to the newest technology available, but to the technology that reaches the most of the community. The study also highlights neglected dimensions of CMCs, such as the importance of the exterior appearance of the venue, and the perception of a switch in their nature from static centers funded by third parties towards more entrepreneurial-driven ones. The presented research also contributes to the ICT4D field by proposing a promising research protocol, which is able to elicit representations otherwise difficult to obtain.

Keywords: Community Multimedia Center; Social Representation; Photo-elicitation; Telecenter; Community Radio; Mozambique.

1.   INTRODUCTION
Community Multimedia Centers (CMCs) are one of the numerous ways of providing access to information to all, as well as reducing the digital and development divides. The model of CMCs (UNESCO, 2004) combines the characteristics of a telecenter, a public access venue (PAV) where people can access a number of different Information and Communication Technology (ICT) services (usually computers, internet, fax, photocopy machines, etc.), and a community radio station, broadcasting in both the official national language and local languages; all managed by members of the community where it is located.

In 2003, Mozambique was chosen for a scale-up phase of the CMCs program. This phase envisaged the creation of 20 new centers in two years and was projected to reach a total of at least 50 centers. The country, which at the end of the 1990s had already seen the appearance of both community radio stations and telecenters separately, was considered to be a promising field for the development of this model (UNESCO, 2004). In 2011, Mozambique

counted 34 CMCs, which – even if varying substantially in resources and services – constituted the prevailing type of PAV in the country (Rega et al., 2011). The Government of Mozambique, supported by the World Bank and by the Finnish cooperative programme STIFIMO (Science, Technology, and Innovation Program between Finland and Mozambique), has now taken charge of the CMCs agenda, recognizing their implementation as a means to provide access to ICTs in all 128 districts of the country (MCT, 2008).

This article aims to inform academics, practitioners, and policy makers of local stakeholders' perceptions of CMCs in Mozambique and is grounded on the concern of understanding the contextual reality as an essential requisite to guarantee the impact and sustainability of ICT-based interventions for development (Brunello, 2010; Heeks, 2002; Irani et al., 2010; Kleine & Unwin, 2009; Tedre et al., 2006).

In particular, this work aims to explore *what are the social representations of CMCs in Mozambique according to staff members and users of the venues*? By adopting the theory of social representations, (Moscovici, 1961) this work identifies the social construction of meanings around a social object (the CMC) as a strategy to gain a deeper understanding of local dynamics of making meaning of the reality. While the theory has already proven to be suitable for the purpose (Rega & Van Zyl, 2011; Rega et al., 2013; Rega, 2010), its application is still quite unexplored in the ICT4D realm.

This research employs an innovative use of a participatory photo-elicitation technique to elicit representations of CMCs as they are perceived by staff members and users of ten selected centers distributed throughout the country. Data are analyzed through a three-step content analysis, which takes into consideration both the visual content of the photos and the textual content generated by participants' interviews.

This research was conducted as part of the project RE-ACT (social REpresentations of community multimedia centers in Mozambique and ACTions for improvement), jointly run by the NewMinE Lab – New Media in Education Laboratory of the Università della Svizzera Italiana (USI Lugano, Switzerland) and by the Department of Mathematics and Informatics and the Center of African Studies of the Universidade Eduardo Mondlane (Maputo, Mozambique). RE-ACT was funded by the Swiss National Science Foundation (SFNS) and the Swiss Agency for Development and Cooperation (SDC).

2.   THEORETICAL AND METHODOLOGICAL UNDERPINNINGS
This section provides a brief outline of the theoretical approach used in the study – the theory of social representations (section 2.1) – and introduces the method used for generating the data – photo-elicitation (section 2.2).

2.1   Social Representations
The theory of social representations (Moscovici, 1961) investigates how people understand their world and make sense of it in their everyday lives. Defined as "systems of values, ideas and practices" (ibid., pp. IX) that help people communicating and making sense of their reality, social representations (SR) are generated through processes that tend to connect new and unfamiliar phenomena to familiar, stable, and shared categories of concepts and images within a given community (Moscovici, 1984).

Interpreting the world is considered within the theory a complex social process that takes place through interpersonal communication and negotiation of meanings among individuals. Moscovici (2000) describes SRs by using a semiotic triangle, which vertexes indicate the "ego–alter–object" relationship, as shown in Figure 1).
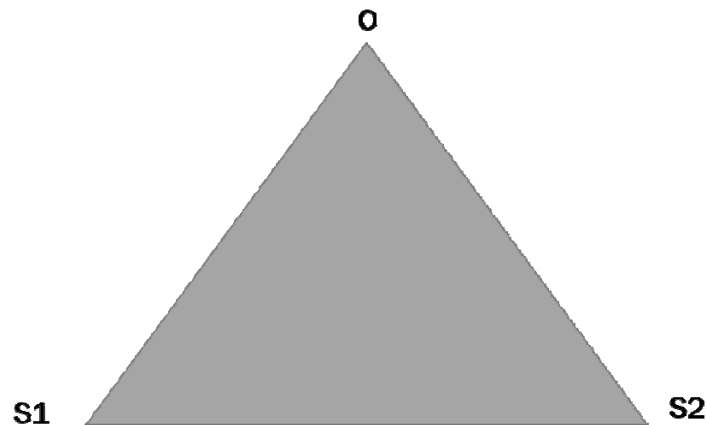
O

S1   **S2**

Figure 1 – The Semiotic Triangle of Social Representations

SR theory (SRT) does not functionally separate the subject perceiving from the object that is perceived. At the same time, SRT puts the subject in relationship with their social group and their socio-cultural context. Rather than being cognitive products of individuals' minds, SRs are products of social interaction and negotiation of an individual and the other, co-constructor of the shared meanings generated (Billig, 1996; Byford, 2002).
SRs of a given social object are constituted by, and shed light on, *values*, *ideas,* and *practices* attributed to it by a given social group (Breakwell, 1993; Duveen & Lloyd, 1993). Within the framework of this theory:

> *An object is social not by virtue of some immanent characteristics, but by virtue of the way people relate to it. In talk people attribute features and meanings to an object, which make this object a part of their group's social world. […] The view that group members maintain about a social object is specific for the group and, hence, also the object itself takes on group specific social characteristics.* (Wagner et al., 1999, p.96)

The emergence and evolution of social representations are therefore contingent to the cultural context where they are generated. Social representations are neither simply a cognitive process, nor only a social process: they are concurrently both, and they are embedded in specific cultural and historical settings, where cognition and interaction of social groups takes place (Jovchelovitch, 2007; Voelklein & Howarth, 2005).

The rationale for employing SRT in this study is grounded on the aforementioned characteristics of the theoretical framework. On the one hand, SR originate when communities are pushed to cope with novelties, and make the unfamiliar familiar (Jovchelovitch, 2007; Moscovici, 1984). Once they are established, even if constantly negotiated, SRs provide community members with shared systems of knowledge and enable them to communicate and develop specific attitudes towards phenomena (Wagner & Hayes, 2005). This is considered to be particularly beneficial when phenomena are (relatively) new and exogenous to specific communities, as it is the case of CMCs in Mozambican rural communities.

On the other hand, the way SRs emerge and evolve is contingent to the cultural context where they are generated. This drawing deep on contextual specificities respond to the repeatedly claimed need for a deeper understanding of the socio-cultural dynamics that underlay ICT4D initiatives (Heeks, 2002; Tedre et al., 2006). Only a deep understanding of

the specific and contextual ways in which ICTs are appropriated and have an influence on different economic and cultural contexts has proven relevant to guarantee the impact and sustainability of ICT-based interventions for development (Avgerou & Walsham, 2000; Unwin, 2009).

Since their origins, social representations (SR) have not been tied to any specific empirical methodology (Duveen & Lloyd, 1993; Wagner et al., 1999); rather, they have been investigated by using a range of qualitative and quantitative methods, from experimental settings to fieldwork (Breakwell, 1993). Data generation methods most commonly used in SR include field observations to study behavioral habits, questionnaires, free associations of words, individual and group interviews, and document and/or mass media content analysis (Wagner et al., 1999).

SR studies using participant-driven photo-elicitation – like this one, where participants are requested to take their own photos – are very few, and usually aim to the creation of photo-diaries of specific realities (Kessi, 2011; Meda, 2011). Nevertheless, the technique seems to provide promising results in terms of empowering participants and letting them have a voice in their own development agenda (Kessi, 2011; Meda, 2011). Most frequent are studies employing visual methodologies to analyze SR in which researchers select the photos to be presented to their interviewees (Harcourt, 2006; Sen & Wagner, 2005).

The use of photo-elicitation is still quite unexplored also in the domain of ICT4D, with few exceptions (see: Nemer, 2013; Uimonen, 2013). Section 2.2 introduces this methodology and its potential for investigating people's perceptions in ICT4D contexts, where researchers typically come from very different backgrounds than those of their interviewees, are left outside of the processes of negotiation of meaning happening among local stakeholders, and need strategies to gather the complexity of social objects at stake.

2.2   Photo-elicitation

Photo-elicitation is an interview technique used predominantly in social and ethnographic research, which uses photographs as integral components of research interviews (Harper, 2002). As a projective method (Abt, 1950), photo-elicitation was used in the design of this study to yield less rationalized information and genuine responses by participants.

Photo-elicitation is defined as a *supporting* method, as photos are used as further evidence to answer a given research question (Rose, 2007). Generally associated with Collier's research on preliterate indigenous Navajo peoples in New Mexico (Collier, 1967), photo-elicitation, by providing wider and different insights into given phenomena, encouraging talks, and stimulating memories, is recognized as a means to achieve results not easily achievable using methods relying only on oral and written data.

Photo-elicitation can be performed by using one of two approaches: (i) photos are chosen by the researcher and showed to the interviewees; or (ii) by utilizing photos taken by the interviewees themselves. For this study, the second option was selected as the optimal technique to elicit social representations of CMCs. This method has been referred to by different names in different disciplines. In the geographic study of Bignante (2010) it is called "*native image making technique.*" Ethnographers usually define it as "*auto-driven*" (Clark-Ibáñez, 2004; Samuels, 2004) or "*participant-driven*" photo-elicitation (Rose, 2007). In this study, we will refer to it as "*participant-driven*" photo-elicitation.

In both approaches, photo-elicitation is believed to prompt reflections by participants, stimulate affective reactions by interviewees, and support effective information transfer (Collier, 1967; Rose, 2007). Bignante (2010), in her study on the use of natural resources in a Maasai village in northern Tanzania, stresses that images are able to involve interviewees more actively and consciously in the research, by empowering and supporting their ability to express themselves and to challenge researchers' mindsets to seek specific pre-conceived

replies. She also states that images can provide additional validity and depth to other more conventional research methods and constitute a useful tool to triangulate between different information sources. Working with school children in California, Marisol Clark-Ibáñez (2004) reckons that photos can reduce possible tensions in the relationship between researchers and interviewees and are able to shed light on data previously invisible to the researcher. Also, photo-elicitation would be useful whenever dynamics of power can intrude into the data generation, as is true in cases of donor-beneficiary relationships (Dodman, 2003). In addition, Samuels (2004) states it is a valuable approach to bridge two culturally distinct worlds: the one of the western researcher as related to that of the non-western interviewees (in Samuels' case, Sri Lankan Buddhist monks).

The use of photo-elicitation in the ICT4D field is still quite under-explored. Examples in the field include the study of Miles and Kaplan (2005) on access to education in Zambia and Tanzania. The authors suggest that the method can be useful to foster reflection in action-research projects, particularly when they take place in oral cultures, where the mediation of written text can inhibit research participants. In line with the literature presented above, Miles and Kaplan reported how the use of images was one of the most promising methods to help participants reflect on their own experiences. Another example is Dodman's study on the relation between young people and their urban environment in Kingston, Jamaica (Dodman, 2003). The study also claims that participant-driven photo-elicitation can be an important instrument to increase empowerment and decrease the risk of getting answers from interviewees structured to meet their perception of answers expected by the interviewer. This skewing of responses can be greater when dealing with children and teenagers, or in donor-recipient relationships.

Other recent studies in ICT4D employ different photo-based methods and reach similar conclusions. Nemer's book "Favela Digital" (2013), for example, reports a photo-ethnographic work conducted in Brazil with marginalized people in community technology centers. The photographic material, shot with the help of the local community but not used for interviewing purposes, aimed to capture local's experience with technology. The work calls attention and raises awareness on alternative, non-strictly development-oriented but equally legitimate, uses of technology in Brazilian favelas. Another example is given by Uimonen's work (2013) on the agency of art and digital media to speak against corruption and to act as mediators of social change. By using a combination of ethnographic and visual methods, which includes videos, photo-elicitation, and online photo-sharing, her study points out how visual material is able not only to document and disseminate the work done against corruption, but also to break the culture of silence on it and empower people to speak out.

The literature suggests that employing photo-elicitation within the domain of ICT4D could lead to interesting results in terms of both participation and empowerment of local communities and gaining unveiled insights on research outcomes. At the same time, the characteristics of the technique – prompting reflection, supporting information transfer, challenging preconceived mindsets and answers – seem appropriate to capture those values, ideas, and practices that constitute the social representations of a given phenomenon.

3.   METHODOLOGY

The research question that guided this study – *What are the social representations of CMCs in Mozambique according to staff members and users of the venues?* – was operationalized into the following three sub-questions:

- Do different social groups (staff members vs. users) have different views regarding CMCs?

- Which component (i.e. telecenter/ community radio) of CMCs is most connected to features that are valued by local stakeholders? Which one is connected to features that should be improved?
- Ultimately, which component (i.e. telecenter/ community radio) of CMCs is mostly connected to how a CMC should and should not be?

The following sections present how the research was designed and conducted.

3.1   Data Generation

Ten Mozambican CMCs were selected to conduct the study in. The sample was chosen on the basis of four different factors: location (one per each province of the country), ownership (government, civil, or religious association), year of foundation of the venue, and variety of services offered. Data were generated during the months of March and April 2011. 48 staff members and 53 users of CMCs (users of both telecenter and rural radio components) were asked to take photos and explain their photo choices. Interviewees were recruited on a snowball sampling method, and all 101 interviews took place at the CMCs.

Interviewees were given a compact digital camera and asked to take two photos. The first one had to portray what they liked of the venue ("*Take a photo of what you like about this place*"), while the second one had to capture what they did not like or could be improved ("*We are also interested in shortcomings and downsides of this place. Take a photo of what you don't like of this place or about something that can be improved here*").

These two questions were conceived to elicit *values* and *practices* connected to CMCs and to shed light on participant's ideas about how a CMC should and should not be. At the same time, the questions had to be easy to understand and answerable by any interviewed person, despite of their different level of education and familiarity with the visual language. Questions were also meant to be open, so that participants could be free to portray what they wanted without being influenced by the interviewer.

Each interviewee was given approximately five minutes to take each photo. The short time available was to mirror the technique of "free association of words" (le Bouedec, 1984), a recognized method in Social Psychology commonly adopted by scholars studying social representations (Contarello & Sarrica, 2007; Contarello et al., 2007). The technique implied that interviewees: (i) had to make quick decisions on the subject they wanted to portray; (ii) could not choose in which moment of the day/week to take their photo; and (iii) could not go far from the CMC to take it. After each photo was taken, participants were asked to show it to the interviewer (through the camera's LCD screen) and to talk about its content and the reasons why they had portrayed it.

Interviewers did not train interviewees either on camera usage or on photography language, except for briefly explaining how to take a photo. As not all interviewees were familiar with digital cameras and with talking through images, explanations of their photos were fundamental in order to understand what they wanted to portray and the reasons behind the images they had produced. While the process of image production was intended to be as easy and straightforward as possible, interviewees' social representations elicitation was presented mostly at the level of the discussion generated by the photos. The same difference in depth is mirrored in the analysis of the data generated (see section 3.2).

Interviews were digitally recorded, transcribed, and coded. Photos were named according to the anonymized interviewee they were captured by (indicating also interviewees' location and role/category) and with a code indicating if the photo referred to what people liked (Photo 01) or to what people did not like (Photo 02).

3.2 Data Analysis

A three-step qualitative content analysis (Krippendorff, 2003) was employed to analyze the two data corpuses: the *photos* (analyzed at the level of the image) and the *transcriptions* of interviews (analyzed at the level of the speech, once transcribed). In both cases, the analyses were performed on the totality of the material and checked as a panel by four of the researchers involved in the study.

At the level of the *image*, an emergent coding content analysis, called photo taxonomy, was performed, which allowed to identify the three main broad spaces related to respondents' perceptions of CMCs, i.e. community radio, telecenter, and the whole CMC premises.

The analysis at the level of the *speech*, performed on the text, was deeper. It was performed in two parallel phases with different qualitative content analysis methods: first, an a priori coding content analysis was applied, based on four dimensions used in the literature to describe telecenters; and second, an emergent coding content analysis on the textual data resulting into 29 codes was used.

3.2.1 Emergent Coding Content Analysis on the Images (Photo Taxonomy)

As a first step, the images produced by the interviewees were treated by means of content analysis applied to the visual material (Rose, 2007). Photos were sorted according to the question they were answering to (i.e.: if they were portraying positive or negative perceptions of CMCs), then coded according to their visual content, leading a division into the three main CMC spaces that were portrayed: the community radio, the telecenter, and the CMC as a whole.

As the resulting taxonomy suggests, pictures labeled as "community radio" portrayed scenes happening at the community radio premises (e.g.: radio speakers, antennas, radio apparatuses, etc.); pictures labeled as "telecenter" portrayed scenes and objects within the telecenter premises (e.g.: digital literacy courses, people using computers – when the computer was not the one of the community radio – computers alone, keyboards, printers, photocopy machines, etc.); and pictures labeled as "CMC" were all those ones portraying spaces or objects that belonged to both the telecenter and the community radio (e.g.: outside views of the building, the secretary's desk, the official plate outside of the venue, bicycles for staff members to go to the community to gather information, etc.). This picture-sorting content analysis was decisive to start the qualitative analysis process and the discussion on the following content analyses among the researchers.

3.2.2 A Priori Coding Content Analysis on the Text

The second level of analysis consisted of a deductive exploration of the interview transcriptions according to four coding categories, which helped ascribe local voices and their representations to the scientific dialogue about PAVs. The four coding categories employed were chosen after the interpretative framework of South African telecenters found in Rega (2010). According to the author, telecenters are operational thanks to four main "pillars" that serve as bases for their services. Two of them regard people (users and managers) and two regard objects (contents/services and infrastructure). These four dimensions were found suitable for the analysis at hand, as they address the theorized need for PAVs to be treated with an "integrated approach" (Townsend et al., 2001). Scholars argue that PAVs depend not only on the technology they own, but also on the demands of their public and on the services that they are capable to offer.

The four coding categories employed in the analysis were applied as follows:
- Coding Category 1: Services. CMCs, like telecenters, offer a variety of services to the communities in which they operate, e.g.: training activities, photocopies, digitizing

and document printing, access to the Internet. Interviews were categorized in this category whenever the interviewee focused on the services offered by the CMC, e.g. *"In our center we have only the photocopy machine, and I would like to improve it so to have all the activities of a full telecenter" (Ilha de Moçambique, member of the staff, Photo 02)*;

- Coding Category 2: Equipment and Facilities. This category refers to the infrastructure and the technical instruments owned by the CMCs, such as electricity, desks, chairs, books, computers, photocopying machines, etc. Interviews assigned to this category focused on technological objects or on the infrastructures of the CMCs, e.g. *"This [photocopy] machine stopped working two weeks ago, and it is not working well. According to the technicians, we have to change some pieces" (Chiure, member of the staff, Photo 02)*;
- Coding Category 3: People managing the CMC, i.e. staff. This category refers to the director, the trainers, and other staff members who plan, run, and maintain the CMC. Interviews were assigned to this category when the focus was on the members of the staff, their activities and roles, e.g.: *"I came to learn computers […], and they are teaching us very well" (Chokwe, user, Photo 01)*;
- Coding Category 4: People using the venue, i.e. users. Users represent the community and their needs. Interviews were assigned to this category whenever their focus was either on the community or on the interviewees themselves, e.g.: *"It is where young people learn information technologies [...] furthermore, they have other activities of interest for the young people and for the community in general" (Chiure, user, Photo 01)*.

The analysis allowed to identify the correspondence between each interview and one of these coding category, and aimed to associate the perception of CMCs by their staff members and users with a clear and structured framework. In 27 cases, however, interviewees developed a more complex argumentation about their photo, and researchers had to categorize a transcription in two coding categories. No interview was assigned to more than two coding categories. The resulting classification represented an important step to systematize the results of the social representation analysis beyond the specific local peculiarities of the ten studied CMCs.

3.2.3   *Emergent Coding Content Analysis on the Text*
The third level of analysis was also performed at the level of the speech. It consisted in an inductive computer-assisted qualitative data analysis (Krippendorff, 2003) through the software NVivo (version 9.2). The coding yielded 29 codes that emerged from the textual data. Codes were analyzed across three levels: the two interviewees' social groups, the portrayed broad spaces emerged from the photo taxonomy, and the two questions used as a stimuli to invite participants to take the photos. Outcomes inform about both staff and users' social representations by considering the positive as well as the negative aspects of CMCs according to interviewees' opinions.

Table 1 summarizes the three steps employed to analyze the photo-elicited data, as well as the main outcomes of each step.

Table 1 – The Three-Step Content Analysis Employed and Respective Outcomes

Level of Analysis	Approach	Outcomes
Visual	Visual Emergent Coding Content Analysis: Observation and Sorting	Photo Taxonomy into 3 Broad CMC Spaces, underlining their role and relevant aspects
Speech	A priori Content Analysis: top-down, deductive	Interpretation of CMCs perception according to 4 a priori coding categories
Speech	Emergent Coding Content Analysis: bottom up, inductive	29 Codes conducing to communities' representation of the *ideal CMC*

4.   OUTCOMES

A total of 101 interviews (48 staff members and 53 users, 64 men and 37 women) and 194 photos (95 by staff members, and 99 by users) formed part of the analyzed corpus of data. Photos demonstrating "liked" elements were classified as Photo 01. Photos demonstrating elements that could be improved were classified as Photo 02. One hundred and one photos portray what people liked of the venue, and 93 portray what they did not like. Nine interviewees (one staff member and eight users) refused to take Photo 02, stating there was nothing they did not like of the CMC. Additionally, some interviewees took more than one Photo 01 and/or 02. In this analysis, only the first photo taken per interviewee per type was considered. Table 2 summarizes the number of photos generated, stratified by interviewee category and photo classification, while the following sections present the results of the analysis at both the level of the image (the photos) and the level of the speech (their related interviews), according to the steps of analysis presented in Table 1.

Table 2 – Number of Photos by Interviewees and by Question

	Staff	Users	Tot
Photo 01 (positive aspects)	48	53	*101*
Photo 02 (negative aspects)	47	46	*93*
Total Count	95	99	194

4.1   Photo Taxonomy

Content analysis on Photo 01 ("*Take a photo of what you like about this place*") reveals that, altogether, the majority (60.4%) of the photos relate to the telecenter, followed by 30.7% that relate to the community radio, and only 8.9% to the CMC as a whole. By splitting these results by interviewees' category, it is clear that users focused more heavily on telecenters (84.9% of their photos). Staff members' foci, on the other hand, were more distributed. Community radio was the focus of a majority of staff (56.3%). Telecenters follow with 33.3% and CMC with 10.4% of the total. Users' group results on Photo 01 are not particularly surprising: the user category includes people of the community who use the telecenter component and were on site during researchers' visits. The fact that staff members focused more heavily on the radio was less expected. Staff members either work across the two components of CMCs or were sampled equally among radio and telecenter staff. Analyzing the Photo 01 set stratified by gender yielded no relevant differences of foci between males and females. Table 3 summarizes the results described above.

Table 3 – Cross-Tabulation of Photos by & Interviewees' Category and Gender (Photo 01)

	Staff	*Users*	*Male*	*Female*	*Total*
CMC	10.4%	7.6%	6.3%	13.5%	8.9%
Community Radio	56.3%	7.5%	35.9%	21.6%	30.7%
Telecenter	33.3%	84.9%	57.8%	64.9%	60.4%
Total Count	48	53	59	34	101

Content analysis on Photo 02 ("*Take a photo of what you don't like of this place or about something that can be improved here*") reveals that most of the photos portrayed either aspects related to the CMC as a whole (58.1%) or to the telecenter component (32.3%). Very few (9.6%) focused on the community radio.

By stratifying the results by interviewee category, no substantial difference in the rank of results is identified. Incidentally, it is interesting to note that no user portrayed anything related to the community radio, while 19.1% of staff members did. Also, staff members' photos are more distributed among the three components of the CMC. In a similar way, stratifying results by gender does not disclose any substantial difference, although female interviewees seem to be more focused on the telecenter than male interviewees. Table 4 summarizes the content analysis on Photo 02. Figures 2, 3, and 4 provide examples of photos classified as community radio (in this case, showing the antenna of the radio, a typical image in these towns panoramas), telecenter (in this case, showing a community member using a fully equipped computer), and CMC (in this case, showing the bicycles used by staff members to go into the community and gather information to be transmitted by the radio).

Table 4 – Cross-Tabulation of Images by Interviewees' Category and Gender (Photo 02)

	Staff	*User*	*Male*	*Female*	*Total*
CMC	46.8%	69.6%	61.0%	52.9%	58.1%
Community Radio	19.1%	0.0%	11.9%	5.9%	9.6%
Telecenter	34.1%	30.4%	27.1%	41.2%	32.3%
Total Count	47	46	59	34	93

Figures 2, 3, and 4 – Examples of photos classified as community radio, telecenter, and CMC respectively. They portray: 1. The antenna of the CMC of Dondo (Photo 01); 2. A community

member using a computer, again in Dondo (Photo 01); The bicycles of the staff members of the CMC of Cuamba, not enough for the need of the centre (Photo 02).

4.2   A Priori Coding Content Analysis on the Textual Data

The application of the four categorical codes to Photo 01 interviews revealed that, cumulatively, interviewees report extensively on Services (Coding Category 1) and Users (Coding Category 4), 34.7% and 33.7% respectively of the aggregated results. Equipment and Facilities (Coding Category 2) and Staff Members (Coding Category 3) follow with 28.7% and 16.8% respectively.

When the data are stratified between users and staff members, differences in ranking of the four Coding Categories do emerge. Users speak first about themselves (Coding Category 4, 39.6%), then about Equipment and Facilities (Coding Category 2, 37.7%), followed by Services (Coding Category 1) with 34.0% of the references. Least reported are Staff Members (Coding Category 3) with 3.8%. On the contrary, staff members speak extensively about Services (Coding Category 1) with 37.4%. They put themselves in second position (Coding Category 3) with 31.3%, mention Users (Coding Category 4) 27.0% of the cases, and Equipment and Facilities (Coding Category 2) 18.8%. Also, it is interesting to see that most of the mentions to Coding Category 2 for Photo 01 made reference to technological objects (Equipment) and not to facilities; as we will see hereinafter, Photo 02 presented, surprisingly, the opposite case, with the majority of the mentions referring to facilities.

The analysis shows how CMCs are mostly appreciated for what is connected with individuals' own *practices* with the center. These practices, then, contribute to social groups' construction of meaning of what a CMC is, what it should be, and what they value it for. Furthermore, users connected their positive perceptions of CMCs much more on Equipment and Facilities than staff members did.

This suggests that users see a clear advantage, may it be real or perceived, in accessing computers and other technologies at the CMCs and benefit from their services. Staff members, instead, are less enthusiastic of the tool dimension. This could be due to the fact that their vision is more holistic, and considers technologies and facilities more as a tool than a goal, to the good of a stronger focus on services and their users. On the other hand, staff are more aware and concerned of drawbacks, primary technical failures, and maintenance issues, connected to of Equipment and Facilities.

When interviewees are stratified by gender, male interviewees appear aligned with the cumulative results (male respondents constitute 63.4% of the interviewees and it would be expected that they influence the sample more), whereas female respondents are the ones that are more focused on Users (Coding Category 4, 35.1%), then comment on Equipment and Facilities (Coding Category 2, 32.4%), and considerably less on Services (Coding Category 1, 29.7%). Table 5 summarizes these results.

Table 5 – Cross-Tabulation of Coding Categories (CC) by Interviewees' Category and gender (Photo 01)

	Staff	*User*	*Male*	*Female*	*Total*
CC1: Services	37.4%	34.0%	37.5%	29.7%	34.7%
CC2: Equipment & Facilities	18.8%	37.7%	26.6%	32.4%	28.7%
CC3: People managing	31.3%	3.8%	17.2%	16.2%	16.8%
CCD4: Users	27.0%	39.6%	32.8%	35.1%	33.7%
Total Count	48	53	64	37	101

The categorization of the interviews connected to Photo 02 reveals that a sizeable majority of the interviewees (88.2%) focus on items related to Equipment and Facilities

(Coding Category 2). Only 11.8% of the aggregated results point to Services (Coding Category 1), and almost no one spoke of Staff Members and Users (Coding Category 3 and 4). No substantial differences are put into light by dividing the interviewees by gender and category (see table 6), with male interviewees and users being, in each case, slightly more focused on Equipment and Facilities (Coding Category 2) than females and staff members. Table 6 summarizes these results.

Table 6 – Cross-Tabulation of Images by Interviewees' Category and Gender (Photo 02)

	Staff	*Users*	*Male*	*Female*	*Total*
CC1: Services	17.0%	6.5%	10.2%	14.7%	11.8%
CC2: Equipment & Facilities	85.1%	91.3%	91.5%	82.4%	88.2%
CC3: People managing	2.1%	4.3%	1.7%	5.9%	3.2%
CC4: Users	4.3%	0.0%	1.7%	2.9%	2.2%
Total Count	47	46	59	34	93

Given that the absolute majority of utterances regarding how a CMC should improve and should not be were related to Coding Category 2, it was decided to further analyze this Coding Category through stratifying its results according to its two components: (technological) Equipment and Facilities. Considering the physical and technological conditions of the venues (for a detailed description of the CMCs included in the sample, see Rega et al., 2011) expectations were high of finding more complaints related to failures of tools to work properly or a need for more technologies. On the contrary, photos show that interviewees' focus was mainly on facilities (73.8% vs. 26.3% of the aggregated results). Even so, results show how this is particularly true for users (88.1%), whereas staff members' photos were more balanced between the two components of the Coding Category (57.9% and 42.1% respectively). Table 7 summarizes the above-mentioned results.

Table 7 – Cross-Tabulation within Coding Category 2 per Interviewees' Typology (Photo 02)

	Staff	*User*	*Total*
Facilities	57.9%	88.1%	73.8%
(Technological) Equipment	42.1%	11.9%	26.3%
Total Count	38	42	80

Figures 5 and 6 show examples from Photo 02 set. Figure 4 was categorized as "Equipment and Facilities" (Coding Category 2), as the interviewee pointed out at the bad conditions of the walls, which was not suited the CMC. Figure 6 was categorized as "Services," as even if focusing on Technological Equipment (or its absence), the interviewee pointed out to the missed opportunity to offer the services of a fully operating CMC.

Figures 5 and 6 – Examples of Photo 02. They portray: 4. The external walls of the CMC of Ilha de Moçambique; 5. Missing equipment, again in Ilha de Moçambique.

A *caveat*: photos may be skewed towards tangible things and the importance of appearance as interviewees may have been unable to express their dislikes of people, worried by the questions that would arise from it. The method, then, might generate a bias towards the presence of objects and away from people.

4.3 Emergent Coding Content Analysis on the Text
The last analysis performed inductively identified 29 main codes as emerging from the interviews. The codes were linked to the three broad spaces – community radio, telecenter, and CMC as a whole – portrayed in the photos. Codes were also linked to the two social groups of interviewees (staff members and users) and to their representations of a positive or negative aspect of CMCs. The analysis informed on staff's and users' social representations by considering the positive and by reversing the negative aspects of CMCs according to the interviewees. The following paragraphs offer a detailed explanation of the outcomes of the analysis, which are then listed in Table 8 according to their total frequency in the interviews.

4.3.1 The Community Radio: Social Recognition and Voice to the Voiceless
Most of the coding references about community radio belong to staff members. Staff's utterances about radio are significantly related to the codes of working experience and personal satisfaction. Some interviewees refer to their own work experience by emphasizing their gained ability to do radio, and their learning soft skills related to it. Others underline the aspect of passion and fulfilling of a dream in doing radio, and a few of them base their satisfaction either on the recognition they get from the community for the work they do, or on a sense of belonging for it.

> *I refer to the great pride that I have, because I was not a journalist before and today I say I'm a journalist [...] it was thanks to the research that I did, of the several colleagues and their teaching that I collected for my training [here]. Today I can say I am a journalist.*
> *Ilha de Moçambique, Staff member.*
>
> *Yes the first gift that left a mark is this, I would not have said that one day I could have had significant experience in working with computer, working as a secretary, have a radio show here in the community. That opened my mind, I began to realize that after all I can do many things, that if there is the chance I'll*

want to grab any opportunity and I will grow, I will reap rewards because of being here.
Morrumbene, Staff member.

The second noteworthy theme in staff members' utterances about the radio is the impact they can have on the local communities, which can be translated in terms of providing information services and giving "voice to the voiceless" (Fraser & Restrepo Estrada, 2001, p.21). It is also mentioned that, thanks to the presence of community radios, districts can overcome previous states of isolation. Such isolation could be geographic but also cultural. On the one hand, community radios were settled up in most cases in places where other radio or information channels did not reach before; on the other hand, they provide locally relevant content in local languages. Staff members also refer to situations in which the radio has established a link between the government and the community.

The importance in this respect is that we come to be part of the population and for the activities it develops it is necessary to be informed of what is happening; through information, we can predict the weather, we inform, educate, the more the population is informed, the better it is for society in general.
Ilha, Staff member.

I like to commit myself to the truth, to inform, to get the truth from the population and inform the population, saying what is happening, giving voice to the voiceless.
Ilha, Staff member.

I like this because, from the moment this project appeared, the population began to share their difficulties, to consider ways to overcome [problems], it created a source of contact between the government and the civil society discussing the local issues.
Chiure, Staff member.

Even though users' references to the radio were rather rare, they correspond with the staff's ones in describing the positive impact of the radio on the local communities. In particular, they insist on the radio role in supporting local communication needs among members of the community, and the benefit of being informed about local and national news. An interesting fact is that most of users' references to the benefits of radio are from one location (Cuamba), where the CMC was born on the premises of a previously existing community radio, absorbing it. More than in other CMCs, in Cuamba the community radio is staff's recognized focal center of interest as a development and civic participation tool (to this respect, see also: Rega et al., 2013).

4.3.2 The Telecenter: A Venue for Learning and Accessing ICTs
Learning is the theme that most and best defines the perceptions of users about telecenters: the majority of the users chose to portray the telecenter when they were asked to take a picture at something that they did like about their CMCs. Their explanation of their choice was mainly connected to their opportunity to learn how to use technologies, namely the computer and, in few cases, the Internet.

*I like it because I learn how to communicate via computer with other countries, to
use that path of the Internet, I like it a lot because it's good to learn the computer.
Chiure, User.*

Some users added further motivations, which could either be related to intrinsic
features of ICTs (typing and printing was considered better than handwriting, ICTs were
considered to speed-up people's work), or would focus on future applications of the use of
technologies,usually related to job opportunities.

*Everyone appreciate [the telecenter]. I say this because we already did many
[computer trainings]and many people had the right to an employment thanks to
this classroom.
Sussundenga, Staff member.*

*Here is where I enrolled to my course, which one day can be useful to obtain a
job, for example as administrative or accounting [...] it is important because I
was already invited many times to work, but it is impossible because they require
[competences in] the Excel package and I don't have it, and now with the
certificate I will be able to go, with the experience the professor [staff member
teaching at the telecenter of the CMC] is teaching I will be able to do this work.
Cuamba, User.*

A few other users perceived the fact of using new technologies as a benefit for itself.
Telecenters are seen as an asset for the community and to the district, for they give access to
ICTs, which was not possible before CMCs were set up. Both staff members and users use
this argument to explain why they like telecenters, which implies a vision of the venue as a
gateway to development and a symbol of keeping the pace with the rest of the world.

*We are now in XXI Century that is an age of globalization and now people, we
should be connected to new technologies of communication and information that
are there in the world. This to say that we, as young people, we cannot lag
behind, we want to know how to use all these equipment and these services.
Chiure, User.*

Staff members contributed only to one third of the references about telecenters. They
mainly describe telecenters as learning places, as general benefits for the community, and
places where they can gain work experience themselves. In their vision, learning is related
almost exclusively to learning the basics for using computers. Computer courses are referred
to as a service that is well accepted and demanded by users. A few staff also mentioned their
appreciation for gaining work experience at the telecenter, and two of them referred to their
teaching experience. Only one member of the staff spoke about their personal satisfaction
regarding the telecenter. These data are easily comparable with the much bigger number of
staff speaking about their personal satisfaction in relationship to the community radio,
underlying once again the privileged focus attributed to it by staff members.

4.3.3   The CMC: Concerns for Comfort, Beauty and Financial Sustainability
Unlike its telecenter and radio components, CMCs as a space on its whole holds a rather even
proportion of references from both users and staff members. CMC general aspects cover two
main groups of codes: the first one is focused on its premises and their appearance, and the
second one regards its financial sustainability and resource management. Both staff and users

were concerned about the physical premises of the CMC, even though they had slightly different perspectives. In contrast, the codes connected to the financial sustainability of the centers appeared exclusively within staff members' utterances.

Premises of the CMCs were addressed in four main groups of codes: the first and more frequently mentioned one is connected to the fact that premises are wrecked or dirty and need to be fixed, and it is mainly mentioned by users. The second most recurrent code is connected to premises that need to be replaced, and it is mainly mentioned by staff members. Users use two more arguments, which are not mentioned at all by staff members: the first one is connected to the negative perceptions about litter on premises as a potential cause of diseases (see Figure 7). CMCs should be always clean and tidy, or they are perceived as unhealthy places. Slightly different, users' idea that disorder and dirt should not be visible and are not worthy of an institution as a CMC, were grouped under the code that refer to the importance of appearance.

> *This photo represents something a little strange that is called garbage. And this to me is not good. It makes us dirty, and in such a place that we regard as beautiful, this very thing spoils our place, it becomes a place that is not pretty anymore.*
> *Chokwe, User.*

Figure 7 – Example of Photo 02 portraying garbage. Location: Chokwe.

The group of codes related to finances and resource management reveals that staff members look at the issue from different perspectives. While there is a general reference to the international aids or governmental donations that CMCs have received in the past, only in some cases this mention evolves into the assumption that external help represent a viable solution to financial sustainability problems. The concern of finding their own sources of revenues groups different examples of CMCs current and potential sources of income, of which photocopies are the most frequently mentioned ones. Other sources include radio announcements and computer courses, sometimes seen as instrumental for supporting the activities of the community radio.

> *I photographed a photocopy machine, because it is a machine that brings benefits to our radio, it is where we raise funds, and this machine has problems, it stopped two weeks ago and it's not working well anymore.*
> *Chiure, Staff member.*

Because of the vital importance of these financial strategies, which, in most of the cases, pay bills and staff subsidies, technologies and premises breakdowns are a direct and tangible threat to CMCs activities. Either difficulties in maintaining, or the complete lack of their relevant equipment are a common problem related to photocopy machines, printers and computers. In addition, missed benefits from the misuse or waste of available spaces and resources are perceived negatively, and it emerges the statement that resources should be made the most of, and represented by several photos of empty or misused spaces (see Figure 8).

This is an empty space that we have here at the CMC, so my dream is to be able to develop here an activity that can bring benefits to the institution itself. This space concerns me a lot because it is an empty space and we don't have a plan to occupy this space so far.
Morrumbene, Staff member.

Figure 8 – Example of Photo 02 portraying an empty, unused space. Location: Morrumbene.

Finally, financial synergies among the different components of CMCs were mentioned, explaining that different services help to financially sustain one another.

Table 8 – List of Codes Including Compared Percentages for all Respondents, and Users and Staff Separately. Codes are ordered by frequency on the total count of interviewees.

Codes	Users	Staff	Total
Learning	75.0%	20.8%	42.3%
Premises need repair	64.6%	26.4%	40.5%
Positive local impact on the community	12.5%	30.2%	19.8%
Inclusion *vs* previous isolation	14.6%	22.6%	17.1%
Personal satisfaction	2.1%	32.1%	16.2%
Internet (experience and desire)	12.5%	20.8%	15.3%
Asset for the district	20.8%	13.2%	15.3%
Lack of (better) premises	16.7%	15.1%	14.4%
Work experience (gained)	0.0%	28.3%	13.5%
Appearance – importance	22.9%	5.7%	12.6%

Lack of equipment	6.3%	18.9%	11.7%
Photocopier	12.5%	11.3%	10.8%
Non-working equipment	2.1%	20.8%	10.8%
Clean, healthy premises	22.9%	1.9%	10.8%
Aid and donations	2.1%	18.9%	9.9%
Synergies among different component within CMCs	4.2%	17.0%	9.9%
Advantages of new technologies (general)	10.4%	9.4%	9.0%
Typing and printing documents	14.6%	3.8%	8.1%
Revenue sources	0.0%	17.0%	8.1%
Facilitate and speed up work	4.2%	13.2%	7.2%
Job opportunities	14.6%	1.9%	7.2%
Local communication needs	6.3%	7.5%	6.3%
Missed benefit	4.2%	9.4%	6.3%
Link with government	4.2%	7.5%	5.4%
Asking help from government	2.1%	7.5%	4.5%
Printer – fax	0.0%	9.4%	4.5%
Communicating with the world	8.3%	0.0%	3.6%
Unsafe premises	2.1%	5.7%	3.6%
Air conditioned	4.2%	1.9%	2.7%

5.   DISCUSSION

Results from the three-step analysis performed on photo-elicited interviews indicate that interviewees were prompted to reflect about what a CMC *is* and what it *should be* in their representation, when asked to portray and verbalize what they considered positive or in need for improvement in the CMCs. In their accounts, staff members and users provided important insights about their *ideas*, *values,* and *practices* – ultimately, their social representations – about the social object CMC. By gathering aspects that were considered positive or negative ones, important insights on local stakeholders' social representations of the ideal CMC – and its functions within the respective communities – were gained.

CMCs are valued first of all because they bestow personal advantages and social recognition to the interviewed social groups. Users benefit from learning basic, but fundamental, computer skills, and, as a result, they are more likely and better equipped to find a (better) job. Their attention is generally more focused on the telecenter component of the venues. Staff members, on their side, are more focused on the value of the community radio. They mentioned how, with their work at the CMC, they gain self-confidence, recognition from the community, and work experience. Besides, they get personal satisfaction from the fact that one of their passions – the job of their dreams, or even a job they would had never expected they could have aspired to – become reality, and that, on top, their efforts are relevant for the development of their own communities. The sense of self-confidence and accomplishment, the acquired social recognition, and the strong sense of expectation that ICTs can be the key to social and economic ascent are in line with the ICT4D literature discussing the "aspirational value" of technology (Pal et al., 2009; Pal, 2012; Ray & Kuriyan, 2010). "Aspiration" and "capacity to aspire," in line with Appadurai's work (2004) are intended as not only the formation of ambitions, but also as the capacity to determine the routes through which ambitions can be accomplished. In the case of Mozambican CMCs, CMC-enabled aspirations for the community and the individuals to improve their social conditions are a group phenomenon, which is nourished by real examples and experiences from the community. Although we did not encounter almost any case of community members who had improved their life conditions due to their computer skills, people mentioned finding a job and getting the certificate from the computer course at the CMC as one of their

principal reasons for attending these courses. On the other hand, we were told several examples of staff members and volunteers who were hired for more profitable jobs thanks to their work at the community radio as well as, to a minor extent, to their possibility to improve their computer skills by working at the CMC.

CMCs are also valued for they absolve to some practical (and much needed) functions within the communities where they operate: by bringing access to ICTs, by supporting communication needs at a local level – such as disseminating announcements, transmitting to people living in remote areas, putting the districts in contact with their outside and with governmental institutions – they help to overcome previous statuses of geographic and information isolation. CMCs also constitute an asset for they make available basic, but uncommon, services like printing, typing documents, and making photocopies. These services are very much requested – they are among the primary sources of revenue for CMCs – as they are indispensable to complete many bureaucratic practices.

Staff members and users have ideas on how CMCs should be to offer a better asset to their communities, mostly focusing on facilities and technologies of the CMCs in general, and to a lesser extent, of the telecenter component. Very few interviewees referred to community radios in this sense: it might be noted that the radio appears to be the part of the CMC that works most smoothly. Facilities and appearance of the venues appear to be crucial to interviewees, even more relevant than the conditions of technologies and the development of new or better services. Staff, and especially users, are concerned with the appearance of the venues, which should look good, clean, and in order. It emerges an underlying idea that the physical conditions of CMCs should be worth of their importance as community relevant centers (to this respect, see also: Vannini et al., 2015), and should provide people working there and people using their facilities with a comfortable place. These outcomes are partly in line with the study of Gómez & Gould (2010) about the influence of the "cool factor" in accessing PAVs, made attractive by a set of subjective perceptions that include unrestricted Internet access, friendly and reliable operators, and a the presence of a comfortable space allowing social interaction. According to the authors, the concept of "coolness" and its influence in social groups' access and interaction with PAVs is still very little considered by academic literature, and certainly needs to be further investigated.

Evidently, premises should be also functional and functioning. Staff members insist on arguing that CMCs should have properly working instruments and premises, which, in their opinion, connects to CMCs financial sustainability. Premises should be adapted to avoid security and safety threats, such as robberies and water infiltrations, people working or using the CMCs should be able to have bathrooms in good conditions, air conditioning should work to preserve technologies, and technologies should be repaired to allow CMCs to survive economically.

So far, CMCs have been economically sustained by external aids, namely by international donors or the national government. While the idea that CMCs should continue receiving financial help by external sources is deep-rooted in staff's accounts, utterances on how CMCs should strive to find and maintain revenue sources, and should make the most out of all their resources is also well established. Missing the opportunity to make the most out of the available resources is perceived as a missed benefit, especially for the CMC itself. This idea might suggest the beginning of a transition, even if at its early stage, in the perception of CMCs, from adhering to a model that is almost entirely sustained by public and international funding, to a more entrepreneurial one, where staff members are actors of its success. As a theory of change (Markovà, 2003), social representations of social phenomena are not fixed, but allow for diachronic changes. Typically, phenomena that are new in a society pass through different phases, until they are socially adopted and appropriated (see also: Bauer &

Gaskell, 1999; Maury, 2007). This change is particularly interesting, as we are indeed considering a new social phenomenon in a society where it was not developed but imported.

6.   CONCLUSIONS
This article has presented social representations (Moscovici, 1961) of ten Mozambican CMCs held by two relevant stakeholders' groups: staff members and users. The methodology used is a combination of photo-elicited interviews and a three-step qualitative analysis performed on a consistent amount of data, both at a visual and at a narrative level.

Outcomes from this study highlight several aspects of CMCs that confirm and increase on the existing literature on PAVs. CMCs are valued from the communities they are located first of all for they bring social recognition to people working or learning there. Partly following a technological imperative argument, the symbolism the venues are charged with is extended from the social recognition of the individual, to the development and social inclusion of the whole community that, for the sole presence of the venue, does not feel left behind. Interestingly, the importance of CMCs is often not related to the newest technology available (i.e.: the computer and the Internet), but to the one that reaches the most (i.e.: the community radio).

The study also shed light on an often-underestimated fact: the importance of the exterior appearance of the venue. Thus, a new nuance enters social representations of CMCs, places very relevant to the community, where users want to feel welcomed, and where an example of cleanliness and order has to be conveyed. Finally, a change, even if at its early stage, in social representations of CMCs is suggested, from being perceived as almost entirely sustained by external funding, to a more entrepreneurial approach.

The methodological and the theoretical underpinnings at the basis of this study are quite unexplored in the domain of ICT4D, and brought several assets to this research. On the one hand, the theory of social representations confirmed it can be used to address the concerns raised by ICT4D scholars, who advocate for a more preponderant inclusion of contextual elements and local voices in ICT4D research (Rega et al., 2013; Vannini et al., 2015). On the other hand, participatory photo-elicitation proved to be a useful method to gain insights on social meanings in a development context, to uncover elements otherwise not accessible by researchers, and to empower and foster reflection on local stakeholders.

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