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Research Article

Exploring the Meanings of Community Multimedia Centers in Mozambique: A Social Representation Perspective

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Abstract

This article presents extensive research conducted in Mozambique that aims to deeply understand how different social groups understand community multimedia centers (CMCs), which are structures combining a community radio and a telecenter. The social representations theory was adopted to interpret narratives of 231 interviewees from 10 Mozambican provinces. Interviewees included representatives of initiating agencies, local staff members, CMC users (both the radio and telecenter components), users of only the community radio, and community members not using the CMCs. Following the analysis of transcribed interviews, six main clusters were identified, each of them shedding light on a specific understanding of a CMC. These are discussed according to a set of sociodemographic variables. This study suggests that the social representations theory is a valuable framework to provide an integrated view of ICT4D interventions by giving a voice to local perspectives without overlooking the initiating agencies' expectations.

Introduction

Community multimedia centers (CMCs) are community-based organizations providing public access to information and communication technology venues (PAVs) that combine a community radio and telecenter facilities. Community radios broadcast relevant information in both the local and national languages. The community radios' reception ranges reach out 100–150 km, and they are managed by local staff. Telecenters are places where community members can access and use a number of information and communication technologies (ICTs), such as computers, the Internet, printers, and photocopiers. Created in 2000, the goal of the CMC model is to generate an equitable information chain that can reach all levels of the population and provide services to meet local needs, thus supporting the development of underserved communities (UNESCO, 2004). This community radio and telecenter “hybrid approach” (Crech, 2006) is meant both to promote education and knowledge exchange about relevant topics for developing societies, and to strengthen remote populations' social inclusion and public participation.

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UNESCO established the CMC program in 2001 in Africa, Asia, and the Caribbean, and its scale-up phase was launched at the World Summit of the Information Society in Geneva in 2003 (WSIS, 2003). Mozambique, together with Senegal and Mali, was one of three African countries chosen for this initiative, due to the success of a previous pilot phase in the country. Supported also by the Swiss Agency for Development and Cooperation, the scale-up phase envisioned building 50 centers in each country in the following years (UNESCO, 2004).

In 2010, the Mozambique program for CMCs was taken over by the Mozambican Ministry of Science and Technology (MCT), with the goal of providing ICT access to all 128 districts of the country within five years. In 2011, when the field work for this study was conducted, Mozambique had a total of 34 CMCs, which, despite variable resources and services, accounted for the prevailing typology of PAVs in the country (Rega et al., 2011).

This article approaches CMCs through the sociopsychological paradigm of the social representations theory (Moscovici, 1961) and explores ways through which social actors co-construct, negotiate, and share representations of social and cultural phenomena. This theoretical framework was revealed to be particularly useful for incorporating sociocultural and contextual elements into the investigation, essential when dealing with ICT4D projects (Brunello, 2010; Tedre, Sutinen, Kähkönen, & Kommers, 2006; Unwin, 2009).

The following sections of this article present the theoretical framework underlying this work; the research design, including research goals, sample selection, data collection, and analysis; and the results of the analysis. Finally, the results are discussed and conclusions are drawn.

Literature Review

Social Representations Theory

The social representations theory (SRT) is a "social psychological framework of concepts and ideas used to study psycho-social phenomena in modern societies" (Wagner et al., 1999, p. 25) that was introduced in France by Serge Moscovici (1961). Moscovici established his theoretical perspective, moving from a revision of Durkheim's (1898) sociological notion of collective representations, according to which the individual mind was considered "a

microcosm of the collective conscience of the society, reflecting forms and contents of the social world" (Parker, 1987, p. 452). Moscovici preferred the term "social representations" (SRs) to account for these phenomena's dynamic and fluid nature within language and everyday communication. SRs should neither be considered as relatively stable, nor should they be confused with individual, cognitive representations (Farr, 1994; Fraser, 1994). SRs are understood as the collective elaboration "of a social object by the community for the purpose of behaving and communicating" (Moscovici, 1961, p. 251). They are defined also as (a) systems of values, ideas, and practices; (b) both process and product of social construction and negotiation; and (c) "embedded in historical, cultural and macro social conditions" (Wagner et al., 1999, p. 25). Representations are generated through two main processes, *anchoring* and *objectification* (Moscovici, 1961).

Rather than being cognitive products of individuals' minds, representations are shaped through social interaction (Billig, 1996; Byford, 2002). These representations are generated from a process of familiarization with new elements of the physical and social world (Moscovici, 1961, 2000), that is, from *anchoring* these elements to preexisting categories of common sense. The aim of such a process is to make "familiar" the unfamiliar, allowing social actors to classify and label the new object according to stable and shared categories of concepts and images (Moscovici, 1984).

In an attempt to overcome the "methodological individualism" (Farr, 1996) of the widespread social psychology theories and approaches, where communication and information are epistemologically conceived as established phenomena (Marková, 2000), Moscovici did not functionally separate the subject and object in his SRT (Moscovici, 1984). Such "dialogical" epistemology (Marková, 2003) is based on implementation of the ego-alter-object semiotic triangle (Moscovici, 2000; Figure 1), which assumes SRs are a "space-in-between, a medium linking object, subject and activities" (Bauer & Gaskell, 1999, p. 167).

Hence, knowledge and beliefs accumulated through history and culture imply "the struggle for social recognition, desires and their symbolic transformations," and delineate an epistemology "of living experience and of a daily thinking rooted in common sense, which is being transformed into

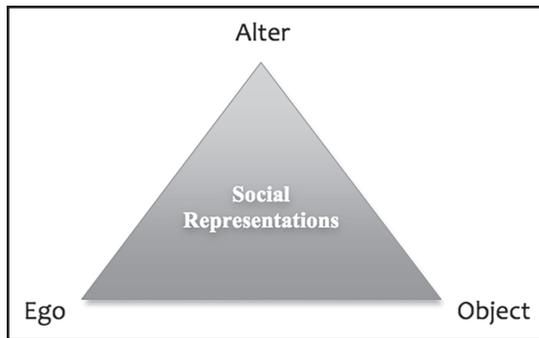


Figure 1. The semiotic triangle ego–alter–object.

new forms of thought and new social representations when conditions for these are obtained” (Markovà, 2010, p. 45).

The distinction between a *reified* and a *consensual* universe, viewed as a “distinctive feature of our culture” (Forgas & Moscovici, 1981, p. 186), is crucial to understanding such transformations. This distinction refers to the courses through which scientific and institutional knowledge is “received and absorbed into a culture, generating new social representations” (Batel & Castro, 2009, p. 416).

Although prior investigations have extensively studied the SRs of ICTs (Contarello, Fortunati, & Sarrica, 2007; Contarello & Sarrica, 2007; Sensales, 1990) and their reflections on identities, cultures, and social changes (Contarello, Nencini, & Sarrica, 2007; Durieux, 2003), to date, few studies have incorporated such a perspective into the specific research field of ICT4D (Bailey & Ngwenyama, 2011). Yet, the authors view SRT as particularly relevant to ICT4D studies, as it permits addressing the recurrently reported design–reality gap (Brunello, 2010; Heeks, 2002; Unwin, 2009) between top-down conceived development projects and local contexts. SRT permits consideration of a more consensual vision among the involved stakeholders. This study attempts to address the issue of definition and negotiation of the elements that characterize the representation of CMCs from two perspectives. On one hand, initiating agencies’ images of the social phenomena is likely to reflect a crystallized system of hierarchical roles, a perception constructed according to a reified and institutional organization of knowledge, competencies, and practices. On the other hand, there is the perspective of communities, engaged in a co-constructive and dynamic activity of

negotiating non-exclusive competencies and recalling the application of consensual tools of exploration and knowledge—that is, SR (Farr & Moscovici, 1984).

Research Design

This section explains how the research design was implemented. First, the research goals are explained; second, the sample of selected CMCs and interviewees is described; and third, the methods for analysis of the collected data are presented.

Research Goals

The SRT approach has been adopted to:

- Explore the meaning of CMCs according to the different social actors involved in the study, and unveil their attempt to re-interpret (Rogers, 1962) and accommodate CMCs within their consensual universe of beliefs (Farr & Moscovici, 1984). In particular, this study attempts to identify the functional metaphors and attributes in the everyday understanding of information, communication, and educational processes and practices (Wagner et al., 1999) related to CMCs; and
- Investigate the emerging representational field through a differential perspective by analyzing analogies and differences related to interviewees’ (a) status (initiating agency representatives, staff members, users of the whole CMC [hereinafter, U-CMCs], radio-only users [hereinafter, U-RCs], or non-users); (b) sociodemographic characteristics, such as age, education, and gender; and (c) location.

Sample

After drawing a map showing Mozambique’s CMCs (Rega et al., 2011), a sample of 10 CMCs was selected by crossing different criteria, with the aim of making the map as representative of the Mozambican situation as possible. First, one CMC from each of Mozambique’s provinces was selected, considering their actual distribution as rural (nine CMCs in the selected sample) and urban (one CMC). Second, CMC ownership was considered: CMCs in the country are managed mostly by local associations (seven in the sample), as well as by the Institute of Social Communication of Mozambique (two CMCs) and by religious institutions (one CMC, managed by Catholic Sisters). Third, the founding year of the

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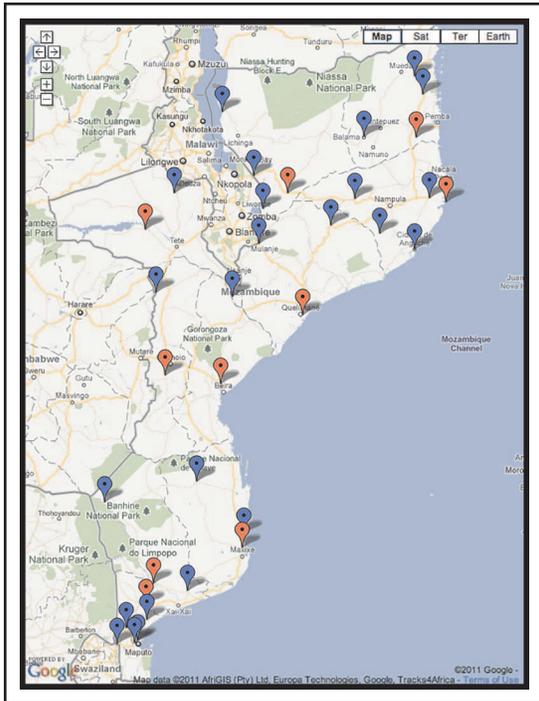


Figure 2. Map of CMCs in Mozambique (April 2011, red pins show CMCs included in this study).

venues was considered. Some of the CMCs in Mozambique were built at the beginning of the UNESCO program, and some even before that, starting with either a preexisting community radio or a telecenter that then became part of a CMC; meanwhile, others were recently established by the MCT (one in the sample). The last criterion considered was the variety of services offered by the venue. Throughout the country, CMCs differ considerably in terms of the facilities and services offered. At the time of this fieldwork (April–May 2011), only two CMCs offered Internet access to the public, while some had services that were specific to their place and did not pertain to the original model (i.e., language courses, “newspaper on the wall,” cinema shows, etc.). Community radio programs, photocopies, and basic computer courses were common services in most of the CMCs we visited. Figure 2 maps the locations of the CMCs in the sample (in red) among the totality in the country (in blue).

Semistructured interviews with members of the concerned groups were conducted. The original project aim was to collect five interviews with staff members, 10 with users, and 10 with non-users for each site. While in the field, however, the notion of

users and non-users began to blur. While pure non-users (i.e., individuals using neither the CMC’s telecenter nor the community radio) were difficult to find, a need to distinguish between users of both components and users of radio only became important. The original two statuses of users and non-users were replaced with three statuses of users of both components of the CMC (U-CMCs), users of the radio part only (U-RCs), and non-users. Finally, interviews with program representatives of the CMCs’ initiating agencies were conducted.

Interviewees in each location were chosen on an opportunity-sampling basis. One CMC program representative from UNESCO and one from the MCT were also contacted and interviewed.

Data Collection

During March–April 2011, we conducted 231 interviews in Portuguese and the interviews were distributed as follows:

- 2 representatives of initiating agencies UNESCO Mozambique and MCT;
- 57 CMC staff members, working either as employees or as volunteers;
- 95 U-CMC individuals;
- 70 U-RC individuals; and
- 7 non-users.

Table 1 summarizes the interviewee categories by gender, age group, and education level. Male interviewees account for about two-thirds of the entire sample. Interviewees were generally young or very young, aged mostly 10–29 years, and their level of education in most cases was secondary school or high school. By proportion, staff members have a higher educational level than the other social actors. Even if objective and comprehensive data about staff members and users was unavailable, the sample appeared to be in line with actual gender and age proportions.

The interview protocol was prepared and validated by following a semistructured interview approach (Harcourt, 2006). The interviews aimed to investigate values, ideas, and practices (Moscovici, 1961) that interviewees attributed to CMCs. Each interview was divided into four sections, investigating the interviewees’ demographics, the identity they attributed to their CMC, the relationship between the CMC and the community, and interviewees’ perceptions of CMCs and ICTs (see Table 2).

Table 1. Demographics of the 231 Interviews.

	Gender		Age group					Education						Horizontal totals
	Female	Male	10–19 yrs.	20–29 yrs.	30–39 yrs.	40+ yrs.	N/A	No school	Primary	Secondary	High	University	N/A	
Agencies	0	2	0	0	0	0	2	0	0	0	0	2	0	2
Staff	15	42	6	24	13	14	0	0	2	21	27	6	1	57
U-CMC	36	59	37	37	13	7	1	0	3	54	31	7	0	95
U-RC	25	45	16	35	8	10	1	2	9	33	19	6	1	70
Non-user	4	3	3	2	1	1	0	0	0	4	1	2	0	7
Vertical totals	80	151	62	98	35	32	4	2	14	112	78	23	2	

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Table 2. Interview Protocol.

Section	Section content
1	About the Interviewee <ul style="list-style-type: none"> • Demographics • Interviewee experience in the CMC • Interviewee exposure to media and ICTs
2	CMC Identity <ul style="list-style-type: none"> • CMC history, structures, and goals • Benchmark, models, rites, and CMC's future plans • Services offered by the CMC
3	Community and the CMC <ul style="list-style-type: none"> • Profile and activities of the community staff members working at the venue • Publics visiting the venue
4	Perception of the CMC and ICTs

Interviews lasted from a minimum of seven minutes to a maximum of 2¼ hours. Non-users and U-RCs usually reported less information than U-CMCs, staff members, and initiating agency representatives. Overall, 109 hours, 19 minutes of recorded interviews were collected. Each audio file was named according to its location, the interviewee's status, and a sequential number (e.g., "Cuamba_Staff2" represents the second staff member interviewed at the CMC of Cuamba) before being fully transcribed.

Methods

A computer-aided content analysis was conducted on interview transcriptions using the T-Lab (version 5.1) software (Lancia, 2012). It should be noted that very short interviews (7–8 minutes) are present in the final corpus. A distributional and non-probabilistic approach to automated text analysis was employed with the goal of mapping the associations of words within elementary context units, rather than determining their statistical distributions in different corpora (Reinert, 1983). This approach allowed us to consistently explore the representation of CMCs underlying the textual corpus as co-constructed and shared by the social actors, despite the variability among topic guides and the interview lengths. This methodology was implemented to measure what Reinert (1983, 1993) defined as "lexical universes," which are specific vocabularies imposed by the speakers in their discourses, whose properties refer to the object of the talk.

The analysis consisted of three main phases.

1. A preliminary lemmatization of the transcribed corpus (329,837 words) led to a final list of 150 keywords, each with a minimum of 99 occurrences.
2. A thematic analysis composed of application of the bisecting K-means clustering method (Lancia, 2012), which led to segmentation of the textual corpus into elementary context units (ECUs). ECUs are extracted statements based on recurrent keyword patterns having a minimum of three co-occurrences of words within each unit and a maximum of 10 clusters obtained.
3. The text was normalized by TDF-IDF, a measure that weights the lexical units within each ECU. This procedure implies scaling row vectors to unit length (Salton, 1988). ECUs were classified by paragraph.

The output obtained consisted of a set of thematic clusters characterized by their relevant ECUs, lexical units (or lemmas), and sociodemographic profiles as expressed by a list of predefined categorical variables, including interviewee's status in relation to the CMC (initiating agency representative, staff member, etc.), gender, age group, education level, and CMC location.

Significant lexical units and variables are ranked by χ^2 value, a measure of the co-occurrence of each word within the ECUs (Reinert, 1993). Interpre-

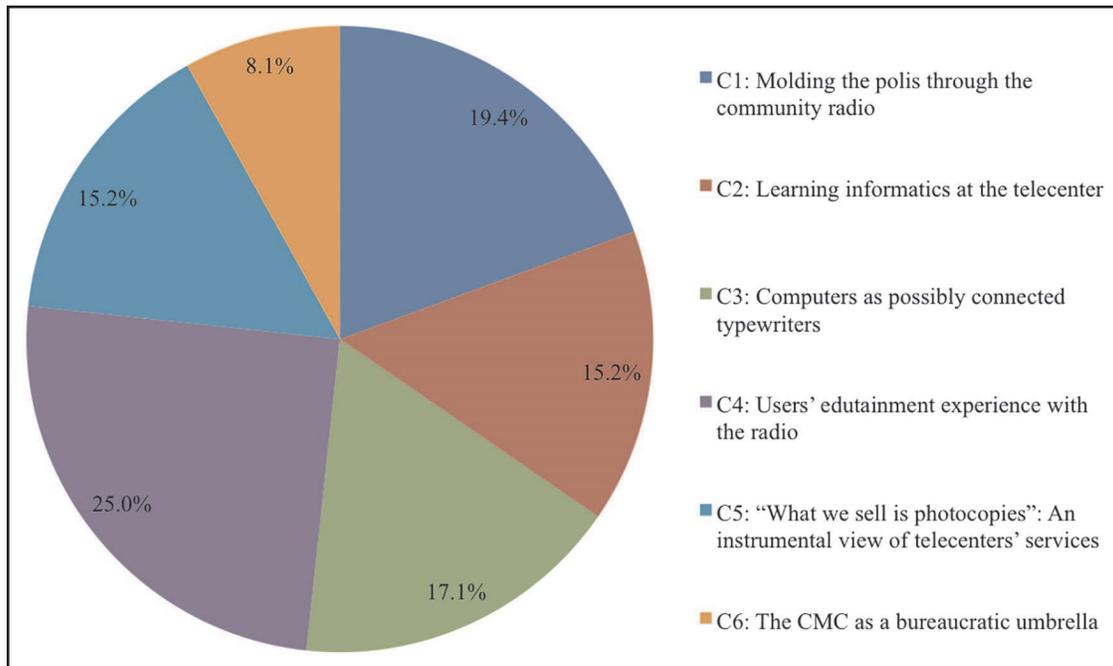


Figure 3. Overview of the resulting clusters according to their weight within the total corpus.

tation of results was based mainly on lemmas whose χ^2 values were higher than 100, as reported in the tables describing each cluster (Tables 5–10) and in the text in italics. When more lemmas semantically characterizing the cluster were found, they were reported in the text and their relative χ^2 values were specified in brackets.

Results

The analysis identified six clusters and their specific weight related to the explanatory power of the variability within the complete textual corpus, their relative ECUs, and the lexical units that contributed more extensively to them. Researchers associated each cluster with a theme, according to the specific vocabulary it featured. Figure 3 and Table 3 summarize the results, which are explained in detail in the following subsections. Each cluster was also characterized by sociodemographic variables, which helped in shaping the SR of the social groups involved (see Figures 4–8).

Cluster 1: Molding the Πόλις (Polis) Through the Community Radio

The pivotal discourse that builds this cluster is focused on the *radio* as a means of *information* and

communication that serves the *community*. The argument develops under a twofold rationale:

- (1) The dimension of *district* is where the radio is seen as an instrument contributing to the *development* of a local reality by guaranteeing the circulation of information produced by and relevant to the community.
- (2) The national dimension is where the radio represents a bridge for getting in touch with the *government* and being informed about what happens in *Mozambique*.

The community radio function as an information and dissemination tool contrasts with two other elements of the media, *television* (χ^2 74.3) and *newspapers* (χ^2 47.7). Unlike the radio, television is unaffordable for most rural residents. Not only it is an expensive device, but the presence of electricity in households cannot be taken for granted. Moreover, broadcast areas do not usually cover peripheral areas of rural districts. Newspapers are not distributed to all districts of the country on a daily basis, they are not in local languages, and they are accessible only to the literate. Thus, the radio is a crucial means of news dissemination. Its role is to *inform*, the adjective *communitarian* is stressed several

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Table 3. Overview of the Lemmas and Themes Within the Resulting Clusters.

	Clusters (see Figure 3)					
	1	2	3	4	5	6
Themes	Molding the polis through the community radio	Learning informatics at the telecenter	Computers as possibly connected typewriters	Users' edutainment experience of the radio	"What we sell is photocopies": An instrumental view of telecenters' services	The CMC as a bureaucratic umbrella
Lemmas	District, Community, Information, Radio, Government, Change	Informatics, Class, Classroom, Training, English	Computer, Internet, Use, Learn, Surf, Machine, Write, Fiddle, Explain, Investigate, School, World	Program, Listen to, Music, Like, Children, Speak, Radio, News, Participating, Calling, Home	Service, Telecenter, Center, Photocopies, Multimedia, Communitarian, Document	CMC, Management, Committee, Association, Coordinator, Volunteers, Work, UNESCO, Pay, Money, Collaborator, Manager, Training, Managing

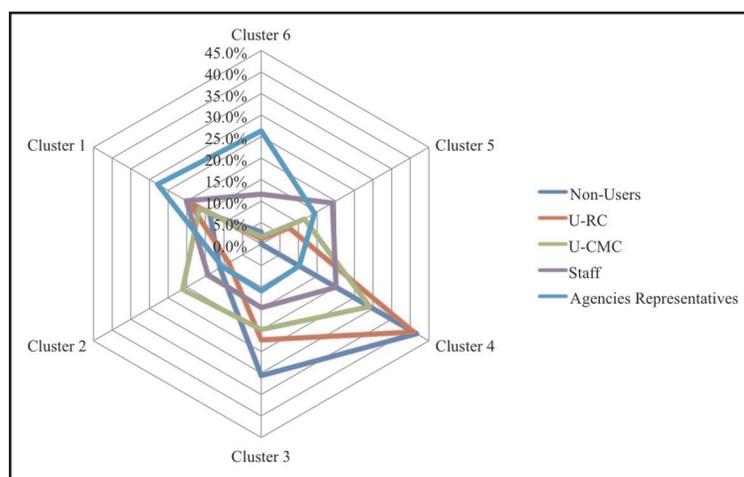


Figure 4. Composition of the thematic clusters according to interviewees' status.

times, and the *population* (χ^2 55.9) is identified as the final beneficiary of its activity. Community radio has the potential to foster sociopolitical *change* in isolated areas, both by promoting development within the community, and by connecting listeners to a larger national reality. As one interviewee put it:

A community radio is an institution for information with the vocation of letting the community

receive the necessary information, the information that is important for its conviviality, for its interaction, it is an institution that creates an opportunity for the people to interact with one another and with other people at the international level.¹

In Table 4, the lemmas and variables that characterize this cluster are identified and listed according to their χ^2 values and occurrences, both in the cluster and in the total corpus.

The main example of this cluster relates to the town of Cuamba. Cuamba lies in the northeastern province of Niassa, which is Mozambique's most isolated province and is almost entirely covered by forests and national parks. The capital of the province, Lichinga, is connected by air to Maputo only three times per week, and Cuamba lies 350 km of unpaved road from Lichinga. This paucity of travel connections is reflected in a lack of information resources. Newspapers normally arrive in Cuamba

1. Quotations from the interviews have been translated by the authors after the analysis.

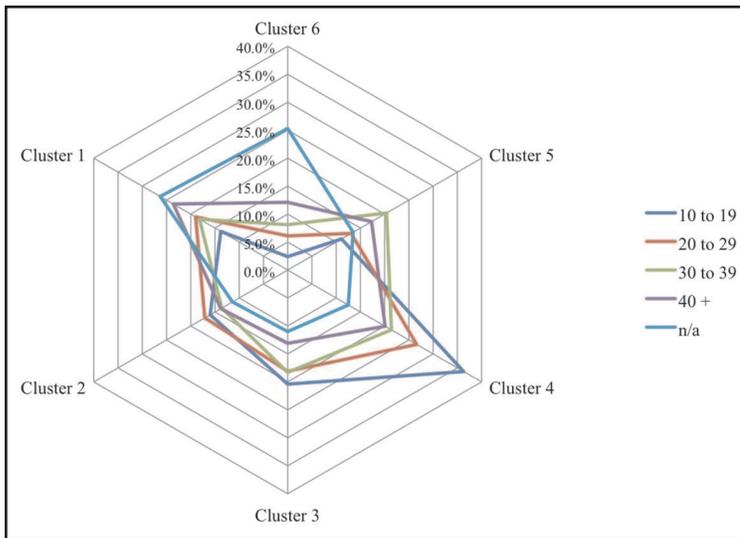


Figure 5. Composition of the thematic clusters according to interviewees' age level.

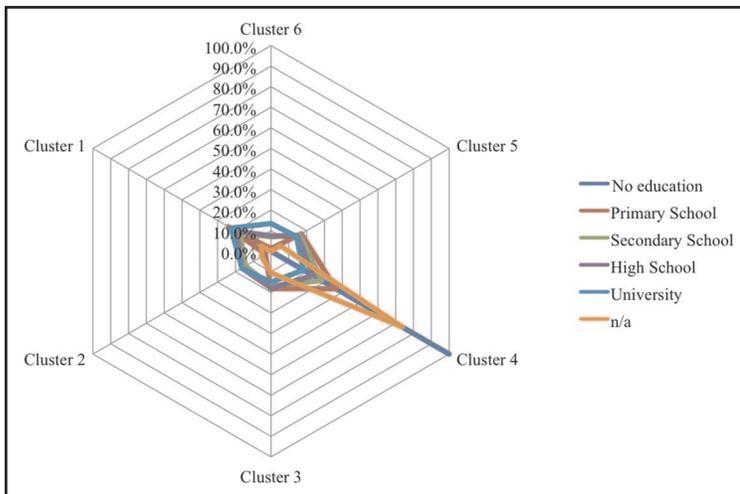


Figure 6. Composition of the thematic clusters according to interviewees' education level.

seven days after publication, making the community radio, in most cases, the population's only information outlet on current activities and news.

Cuamba is situated on the railway corridor from Malawi to Nacala, the largest commercial harbor in Mozambique. Cuamba hosts a branch of the Catholic University of Mozambique, which makes the town both an important stop for travelers and goods and the second-most populated municipality in Niassa. The demand for communication and par-

ticipation in the local community's social and political life is strong.

Interestingly, this cluster clearly summarizes the CMCs' information mission, but it contains no lemmas that refer to computers, the Internet, or anything related to telecenters. The following interviewee quotation appears to give the same relevance to both the radio and telecenter components; however, only the radio is mentioned as a means of information dissemination:

Because it is a radio and telecenter, now it was merged all into one CMC, I will explain that the part of the telecenter, it has to do with information technologies, now the part of radio, and diffusion of information.

Regarding the sample's composition, no substantial difference can be seen among interviewees' statuses or between genders in the cluster. Regarding age and education, the oldest people and the extremes of the education system (primary school and university) are the most represented ones. Those interviewees possessing only a primary education seem not to be the youngest persons, but the older social actors. Older people are usually less literate, so they focus on oral communication, and because of their age, they are keener to view the radio as a sociopolitical instrument. The

older population experienced the Mozambican civil war and participated in shaping modern Mozambique, and because of their background, this group of interviewees was particularly aware of the importance of contributing to molding their *polis*.

Cluster 2: Learning Informatics at the Telecenter

While the first cluster, which concerned the importance of community radio, was built around the conceptual dimension of information, the second cluster refers to the telecenter and shifts to a

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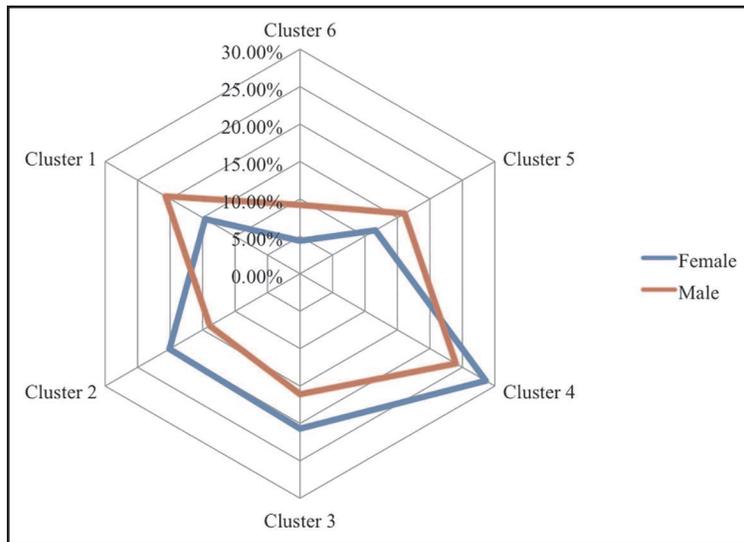


Figure 7. Composition of the thematic clusters according to interviewees' gender.

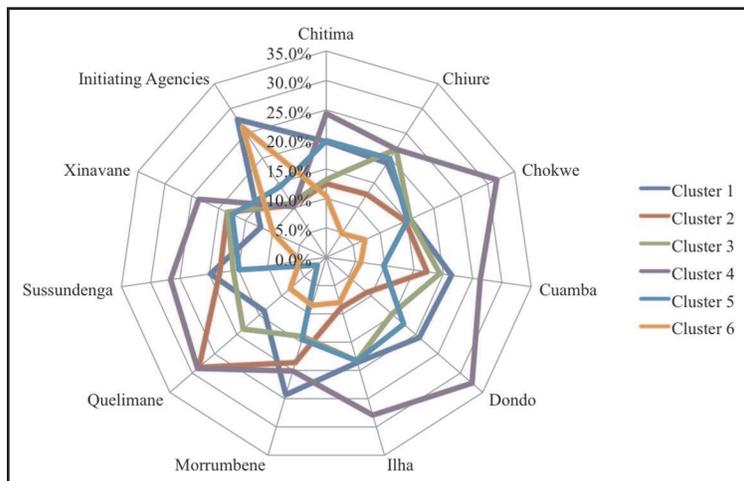


Figure 8. Composition of the thematic clusters according to interviewees' location.

conceptual dimension that relates to training and education.

Within the community, the telecenters' main functions relate to places where users go to *learn* (χ^2 79.5) how to use *computers* (χ^2 76.2), and to attend courses to master *informatics*. The most frequent lemmas within this cluster relate to the main aspects of the educational domain: people, strategies, and content (Cantoni, 2007). The two main players in education are *students* (χ^2 87.1) and *teachers/trainers* (χ^2 73.3). The experience is struc-

tured into *courses* divided into *classes*, which are led by a trainer in a physical place, i.e., the *classroom*. Interestingly, besides the courses about digital literacy, another recurrent lemma refers to classes for *English language*. At the time of the interviews, two CMCs within the sample, Cuamba and Chokwe, offered English courses. Interviewees in other CMCs expressed the desire for telecenters to enlarge their course offerings to include foreign languages.

Interviewees identified the telecenter with a learning center offering mainly computer courses based on the MS Office *package* (χ^2 59.95); however, their representation does not include the Internet. The telecenter is not seen as a place to access the Internet, to gather information, or communicate with distant relatives and friends. Per one interviewee, "We call it informatics classroom: The classroom of informatics is a room that is reserved for studying informatics, [a room] where there are computers." The community regards the telecenter as a place where people can access computers and learn informatics as a source of social prestige and honor, and the community considers the telecenter as a status symbol. Another interview put it thusly: "It is important because we learn

to know what a computer is, we learn computer programs, we study the computer as well, but it is much more an honor for Xinavane, we now know that we have informatics courses."

Thus, respondents perceive mastering informatics as an added value in itself; informatics is not seen as a tool for performing tasks or reaching goals. This vision, known as *technological imperative* (Bates, 1997; Brunello, 2010), is typical of settings where technologies are in the process of being adopted and their symbolic meaning is stronger than their

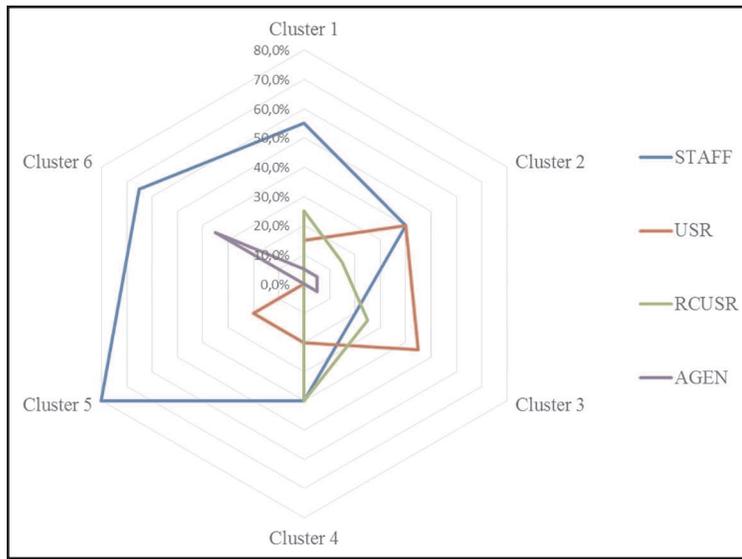


Figure 9. Composition of the thematic clusters according to the statuses' UCE according to the clusters.

useful one (Fanni, Tardini, Rega, Cantoni, & van Zyl, 2010).

Regarding demographics, there is no substantial difference among interviewees' gender and age in this cluster. A large number of interviews from the Quelimane location show that the telecenter is strong in terms of management and training. A small number of interviews from the Ilha de Moçambique location is probably due to the fact that there were no working computers for the public when the field work was conducted. As for education, the underrepresented categories are interviewees with no schooling (0%) and those with only primary school education (3.1%). Social actors with a lower educational level may not have the skills or the motivation to use ICTs, while they may be keener to exploit the community radio component of the CMC. The same applies if interviewees' status is considered, with U-CMCs being the most represented in this cluster (21.1%) and U-RCs the least represented (8.7%).

Cluster 3: Computers as (Virtually) Connected Typewriters

This cluster reveals the representations social actors have about *computers*. Computers are seen as augmented *typewriters*,² which leads to the possibility

of *fiddling with the Internet*. This type of anchoring is typical of social systems where computers have just been introduced. The same conceptualization was found in Western society about 25 years ago when interconnected computers were new (Sensales, 1990). In line with SRT (Farr & Moscovici, 1984), we found that this operation reflected the process of *anchoring* this "new" cultural artifact into a "particular system of categories and compare[d] it to the paradigm of a category which we think to be suitable" (Moscovici, 2000, p. 42), implying the formation of expectancies and the attribution of functions related to the use of computers in daily life and

social interaction.

The primary use of computers here is threefold: (1) They are seen as a tool used to *surf* the Internet, opening a window to the outside *world* (χ^2 59.3); (2) they enable students to complete their *school-work*; and (3) they are a tool for *writing* and *printing* (χ^2 39.7) every sort of *document* (χ^2 35.3).

A closer look at ECUs suggests a gap among these three uses mentioned above:

1. Actual use of computers, which is still relegated to use in digital literacy classes (see Cluster 2), as stated by staff members, "Here we don't have women, but we have many men coming and looking for our services. They come most of all to learn computers, people come here just for computers."
2. Imagined use of the Internet as a window onto the world, as highlighted by non-users who describe it by using terminology that appears connected to advertisements (broadband, mobile Internet, etc.): Internet is a page of the broadband . . . there is mobile Internet, there is fixed Internet that is the one of the computers, it is Internet that you use when sitting in an

2. In Portuguese, *maquina de escrever* literally means "machine for writing."

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Table 4. Lemmas Characterizing Cluster 1.

Lemmas	Chi ²	E.C. in cluster	E.C. in total
District	688.8	293	435
Community	615.3	539	1,155
Information	414.9	513	1,263
Radio	371.3	1,362	4,698
Mozambique	349.5	155	235
Communitarian	292.1	271	592
Government	179.8	103	179
Cuamba	143.9	85	150
Change	108.1	91	190

Table 5. Lemmas Characterizing Cluster 2.

Lemmas	Chi ²	E.C. in cluster	E.C. in total
Informatics	2,823.5	763	956
Course	1,942.7	503	611
Room	1,111.7	308	390
Class	154.9	92	181
Training	129.4	141	366
Train	106.4	98	237
English	105.9	37	54

Table 6. Lemmas Characterizing Cluster 3.

Lemmas	Chi ²	E.C. in cluster	E.C. in total
Computer	1,716.2	987	1,813
Internet	1,557.4	665	1,032
Use	613.7	400	773
Learn	513.8	385	795
Surf	355.4	106	131
Machine	236.2	180	373
Write	139.7	125	278
Fiddle	132.7	75	134
Explain	128.9	136	324

appropriate site, mobile Internet is the Internet that you surf from your phone and wherever you are, you can surf.

- The possibility, though not a concrete experience, of accessing the Internet, as mentioned by U-CMC:
I would like that this situation of surfing the

Internet, that they would go on enrolling people, we still don't know how to surf the Internet via computer, for us to learn. . . . I still did not use it. But when it will be taught, I will use it.

As for the demographics, we found no substantial difference in this cluster among interviewees'

Table 7. Lemmas and Variables Characterizing Cluster 4.

Lemmas	Variables	Chi ²	E.C. in cluster	E.C. in total
Program		2,120.7	981	1,196
Listen to		1,220.5	544	646
Hear (listen to)		580.6	385	558
Music		464.0	242	311
Like		455.3	515	937
Children		433.6	250	338
Speak		368.6	369	639
Radio		251.4	1,624	4,698
News		224.7	239	423
Participating		193.2	162	260
Calling		149.4	147	252
Home		138.4	227	468
	<u>_STAT_RCUSR</u> ¹	104.7	315	770

1. _STAT_RCUSR is the variable indicating interviewees' status (_STAT) that refers to RC users (_RCUSR). In the clusters, all variables appear in capital letters and are preceded by an underscore.

gender, level of education (except for interviewees who did not enter the school system and are not represented in this cluster), or age range (except the oldest group, which is the least represented). Probably older and illiterate social actors have neither experiential nor metaphorical instruments to make sense of the concept of computers or the Internet. Looking at the variable "location," we see that CMCs where no public Internet connection was available, those in Chiure, Cuamba, Ilha de Moçambique, Quelimane, and Xinavane, are the most represented in this cluster. This reinforces the interpretation of the Internet given by interviewees who lack significant exposure to it and refer to the realms of imagination and projection, a conjecture supported by the fact that non-users are the most represented status within the cluster (30.6%).

Cluster 4: Users' Edutainment Experience of the Radio

This fourth cluster is clearly depicted by discourses about the community radio experience, presented by actions like *listening* and *hearing*, but also *speaking* and *participating*. Community radio practices comprise passive encounters, as well as active behaviors, such as *calling* to comment during programs, participating as a guest speaker, expressing opinions, and discussing everyday difficulties. The verb *to speak* refers not only to staff members who do broadcasting, but to everyone in the community. As one interviewee articulated this concept, "[T]hey

call most of all to participate in some of the programs, to send wishes to parts of the family that are far away from them."

Community participation in broadcasting is also evident in some programs produced by the community itself. An example is the *children's* program, created by local children and young people to discuss educational issues, ranging from children's rights to behavioral recommendations and affectivity. Participating in programs makes meaningful use of the radio in the districts, and it is a way for communities to play a role in their own societies.

Adults also listen to children's and other educational programs. The age composition of the elementary units of this cluster reveals that the majority of interviewees were aged 10–19 years old. The other age groups follow in a pyramidal order, and many social actors in their 20s and 30s, and even those who were older, mentioned this program.

A review of the educational level of this cluster confirms that youngsters attending primary school and adults with a low educational level characterize this cluster.

First, the radio constitutes a means of education. Programs for children may be directed not only to youngsters, but also to people in the community who lack a deeper formal education, who prefer to use their local *languages* (chi² 50.8), and who recognize the radio for its (informal) *educational* role (chi² 34.8).

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More radio content related to the socio-educational paradigm is mentioned. On one hand, *women's* programs (chi² 32.1) that deal mainly with women's rights and *debates* (chi² 50.6) are connected to an idea of radio as a participative means, which can help shape the society. On the other hand, programs on *agriculture* (chi² 53.7) that underline the radio's development function, as well as those on the *news*, emphasize how the radio satisfies information needs. One interviewee put it this way: "I am a teacher; I catch the program about health; now they are broadcasting a program about public quietness and a program . . . against domestic violence."

Finally, the role of *music* is not to be underestimated. Music appears to have a central position in this cluster, and it is connected to entertainment and leisure, motivating both listeners and volunteers of the CMC:

In the radio, what I like the most are informative programs; for example, programs about sport, about information of what happens at the local, as well as at the national and the international levels. I also like very much programs for children, other programs as music; I like entertainment in this case.

Not surprisingly, the cluster is composed mainly of U-RC and non-users, with lower numbers of U-CMC and staff members. Initiating agencies seem to give less weight to this discourse.

Cluster 5: "What We Sell Is Photocopies": An Instrumental Look at Telecenters' Services

Cluster 5 is characterized by discourses about telecenters as places to serve communities with more basic, but greatly demanded, services, the most relevant of which is *photocopies*. "[O]ne can say he needs a photocopy . . . so I can explain him to go to the multimedia center, because at the district level the multimedia center is the only place where they take photocopies."

In many cases, CMC telecenters are the only places where people can obtain photocopies without having to travel to the next town that offers that *service*. Thus, the presence of a photocopier at the telecenter is often regarded as a way to reduce travel, save time and money, and respond to a *necessity* (chi² 24.6)—a *communitarian* service.

At the same time, making photocopies is one of the main ways to financially support the CMC, as

often stated by staff members, the most represented group in this cluster. The following quotation describes the perception of a staff member who sees the community radio as a significant place for personal entertainment (see Cluster 4) and the telecenter as an instrumental place that offers photocopies and fax and typing services:

In the radio I ask for music I like and I am satisfied. Well, for me the telecenter, I would say, it is a place where people can have a minimal service, it's the case of photocopies, they can go to the telecenter to get also the service of the fax.

Discourses in this cluster are not limited to *making* photocopies of *documents*, but also extend to *typing* (chi² 55.8), *printing* (chi² 55.7), and sending and receiving *faxes* (chi² 54.4), using terms such as *working* (chi² 45.8), *machines* (chi² 30.8), and using (*copying, taking*) the services (*attend*, chi² 72.6). The use of such concrete terms provides a realistic insight into the life of a telecenter, made of quick and concrete responses to routine community *needs* (chi² 24.6). Everyday life is pervaded by technology, and has to be part of it: "I would say the telecenter is a place where we can have some services . . . for example, those services of photocopies, printing and typing, services that can help this very same community to have something more organized."

In this cluster comprising daily, concrete activities, computers appear only through the lexical universe of typing. Computers are not seen as a window to the world.

This cluster is composed mostly of interviewees older than 30, with no dominant educational level, who mainly are staff members. There is also a high presence of initiating agency representatives, who seem to be aware of the importance of these basic services, as well as U-CMCs. There were few U-RC representatives, and non-users do not appear in the cluster at all.

Finally, the distribution among locations is balanced, except for Quelimane, where there is a low level of these discourses. It is unsurprising to observe that the Quelimane CMC does not offer a photocopy service, but does focus on offering computer training courses (as reflected in cluster 2).

Cluster 6: The CMC as a Bureaucratic Umbrella

The sixth cluster is characterized by the CMC being viewed as an entity. The discourse addresses three

Table 8. Lemmas Characterizing Cluster 5.

Lemmas	Chi ²	E.C. in cluster	E.C. in total
Service	907.6	471	917
Telecenter	789.5	387	729
Center	746.3	372	707
Photocopy	702.2	252	395
Multimedia	578.4	186	272
Making photocopies	256.4	141	281
Communitarian	162.3	82	156
Document	142.2	142	375
Taking (for photocopies)	123.1	158	461

main arguments, about (1) people, (2) the institutional bodies involved, and (3) activities. All refer to the administrative umbrella that seals the CMC model.

People mentioned in the cluster pertain to CMCs' management sphere. First, there are *coordinators*, *managers*, or *bosses* in charge of organizing all CMC activities. CMCs usually have a general coordinator and two directors, each in charge of the community radio or the telecenter; however, this division is not always observed or interpreted in the same way. Second, *volunteers* were mentioned as one of the main pillars necessary for the CMCs' continued operation. Volunteers are usually the newest and youngest people working in CMCs, typically working in exchange for computer and radio training. Finally, *collaborators* are mentioned. Depending on the financial model of the single venue, collaborators may receive incentives or salaries. They are usually more stable than volunteers in terms of time spent at the CMC.

Institutional entities, both local and national, are also mentioned. At the local level, discourses include *association*, *management*, *committee*, and *executive* (chi² 58.1). The terms refer to local persons who manage the CMCs, as part of the strategy to ensure their sustainability and continued service to the communities. The term *UNESCO* refers to the national (and maybe international) level of the program.

Finally, several managerial activities are mentioned, from the general, such as *working*, *managing*, *coordinating* (chi² 86.3), and organizing *meetings* (chi² 66.9), to the specific mention of accountability, such as *money*, *paying*, *accounts* (chi² 79.1), and *training*.

The discourse in this cluster, therefore, shows CMCs being formed by people, a bureaucracy, and organizational structure: "The radio and the telecenter are served by the same secretary. In between the two coordinators, there is the administration. There are volunteers. We have a management committee." CMCs are presented as an institutional and administrative shell, while their content and services remain out of this discourse. The CMCs discussed here are an institutional artifact or *model* (chi² 67.0), dissociated from the daily practices and activities of the radio and telecenter, as presented in clusters 4 and 5. This dichotomy is confirmed by the linguistic register employed, which was more formal and institutional, as opposed to the language in the former ones, which was more connected to daily life.

Discourses about financial resources stress the concern to administer them transparently (chi² 42.7) and pay salaries (chi² 48.9) to collaborators:

Well, when I came here, my activity was to restore the CMC because it was not working properly. There were relationship problems between volunteers and members of the Directive Board of the CMC radio; also, there was no transparency in terms of public management in the CMC, the money, the assets . . . and the last issue we became aware of was that the CMC does not make money.

Finally, this institutional discourse lacks the perspectives of service design, communication, and incorporation into the social fabric of the communities involved, perspectives that future research and planning should consider.

This cluster mainly comprises interviewees related

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Table 9. Lemmas and Variables Characterizing Cluster 6.

Lemmas	Variables	Chi ²	E.C. in cluster	E.C. in total
CMC		1,281.9	321	927
Management		685.8	79	125
Committee		549.9	65	105
Association		497.2	113	302
Coordinator		430.7	86	209
Volunteers		386.9	70	158
Work		196.5	212	1,381
	_LOC_NA ¹	180.9	70	266
	_STAT_AGEN	180.9	70	266
	_AGE_NA	171.7	71	281
	_STAT_STAFF	158.7	361	3,105
	UNESCO	144.8	39	117
Pay		142.4	57	221
Money		137.2	49	177
Collaborator		131.8	34	99
Manager		129.9	25	59
Training		120.6	74	366
Managing		114.1	20	44
Boss		101.9	36	129

1. *_LOC_NA*, *_STAT_AGEN*, *_AGE_NA*, and *STAT_STAFF* are the variables depicting, respectively, interviewees' location (*_LOC*), status (*_STAT*), and age (*_AGE*). The code *_NA* means not available, *_AGEN* means initiating agencies, and *_STAFF* means staff members.

to initiating agencies and staff, with a prevalence of the prior. A gap appears to exist between institutions and the communities, the latter of which are unrepresented in this cluster. On one hand, staff members appeared unready to create the bridge that would communicate the CMC model as a *united organization* and not as two separate entities. On the other hand, representatives of initiating agencies showed that they recognized the CMC model, and that they were aware that reality is different. As expected, interviewees in the cluster were highly educated (most of them have a university degree) and were among the oldest respondents in the sample.

Discussion

The previous sections presented a computer-aided cluster analysis exploring the SRs (social representations) of Mozambican CMCs by five social actors: initiating agencies, staff members, U-CMC, U-RC, and non-users.

The analysis identified six clusters, each empha-

sizing different ideas, values, and practices related to CMCs in Mozambique. Of all the ECUs (elementary context units) in the corpus, two clusters concerned with the community radio component of the centers constitute 44.4%. The first cluster underlined the CMCs' sociopolitical role as means of information and aggregation for the towns they operate in; the second focuses on the CMCs' edutainment characteristics. The telecenter component emerged in another two clusters, accounting for 30.4% of the ECUs in the corpus. Discourses about telecenters describe them as computer training venues and places that fulfill practical daily needs of remote communities, such as providing photocopies. One cluster (17.1% of all ECUs) did include discourses on the Internet and its benefits, but it seemed to describe a more hypothetical approach to the Internet, rather than first-hand experience. Finally, one cluster (8.1% of all ECUs) presented bureaucratic aspects connected to the CMC model.

By comparing these universes of lemmas with UNESCO's official definition of CMCs as presented in the introduction (community-based venues that

combine a community radio and a telecenter, the purpose of which is to promote education and knowledge for development and to strengthen social inclusion and public participation; UNESCO, 2004), some misalignments appear to exist. First, the idea of development that emerges from the clustering is not systematized into application areas, such as health or agriculture, nor is it completely adaptable to other communities' needs. Interviews underlined a different idea of development, centered mainly on community radios as social aggregators and telecenters as providers of photocopies and basic computer literacy courses, thus helping people both in their routine bureaucratic needs and in improving their computer competencies. Second, the synergy between the community radio and the telecenter, as presented in the model, is challenged. Our analysis shows that more importance is given to the radio component, while telecenters are often seen as instrumental to the functioning and financial sustainability of community radios.

Likewise, the six resulting clusters were analyzed according to interviewees' demographic variables and some interesting misalignments in the SRs of different social groups were revealed. The two prevalent representations of initiating agency representatives included the sociopolitical benefits of community radios and institutional and administrative discourses concerning the CMC model. While their bureaucratic discourses are unsurprising, the discourses' prevalence emphasizes the fact that the community radio has much more consideration than the telecenters, and that they place greater emphasis on the instrumental aspect of a telecenter than its development potential as a means for providing education. Finally, even if the radio is mentioned often in their representations, initiating agents tend to focus on its participation-enabling nature, as opposed to other social groups, who stress it as edutainment.

Staff members present a more even distribution of their discourses throughout the clusters, yet they devote more attention to community radios than to telecenters. Surprisingly, even U-CMCs refer more to community radios than to telecenters.

Younger respondents focus more on the radio's edutainment function than on its potential for community participation; the opposite is true of the oldest generation. Discussions of the Internet and its potential do not reflect age differences among inter-

viewees. Discussions of radios as a means of sociopolitical participation do appear more frequently with interviewees having the lowest or the highest educational level, and correspond mostly to older social actors. Discourses about radios' edutainment role are mentioned at all educational levels, but mostly by less-educated social actors. Not surprising, the least educated social groups do not consider CMCs as places to be trained in basic computer skills, and institutional discourses are less frequent as the educational level of the social group decreases.

CMCs' different location representations show no substantial differences. The radio's edutainment role is discussed by all groups, while the CMC model's administrative umbrella is the least discussed aspect. Exceptions to this representation are shown in two instances. First, Morrumbene, the newest CMC in the sample, is where the first cluster by number of ECUs relates to the radio as a means of participation. Second, Quelimane is where the discourse concerning the instrumental view of the telecenter is least common, probably because this CMC does not depend as much on photocopies for its financial stability as the other CMCs do.

Finally, a comparison of interviewees by gender reveals that more male interviewees consider the radio as a means of sociopolitical participation, while female interviewees tend to emphasize telecenters as learning places and the benefits that access to the Internet would bring. This could indicate that females have fewer opportunities to access the Internet and to attend computer courses at the telecenter in order to improve their social status.

Conclusions

This study has explored the social representations of CMCs in Mozambique. The analysis showed how the social actors, through their discourses, attributes, and anchoring strategies, are in the process of accommodating the social object—the CMC—into the consensual universe of practices and values shared within their communities. This suggests that the first step toward local ownership of the CMC, the re-invention process (Rogers, 1962), is being undertaken.

This positive re-invention carries with it two main challenges. First, that initiating agencies must acknowledge that this process is taking place, so they can both adjust their expectations in terms of out-

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comes and success criteria and plan meaningful improvements for the local context. In the case of Mozambican CMCs, this acknowledgment is in its initial stage, as is evident by looking at the difference in the importance attributed to learning by initiating agencies versus the other social groups. The two learning-related clusters, developed around the idea of the telecenter as a digital literacy training center and the radio as a means of edutainment, do not receive much attention in the representation of initiating agencies, while the idea is relevant to the SRs of local social groups.

Second, changing an already-shaped SR requires greater effort than molding it at the beginning of the intervention. In this study, for example, local staff broadly sees the telecenter as the means of financially supporting the radio. Actions to change this representation, to rebalance the importance of the telecenter element in the CMC ecosystem (Creech, 2006), and to give it a sociodevelopmental perspective, will require greater resources than are needed to create a connection between digital technologies and concrete developmental goals.

It is clear that an attempt should be made to supersede a top-down perspective with a more consensual vision (Moscovici, 1961) based on a careful consideration of the needs, practices, and value systems that characterize the social and developmental agendas of the involved communities. This study showed how the SR is a valuable construct that provides an integrated view of ICT4D interventions by giving a voice to local perspectives without forgetting initiating agencies' expectations. ■

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