Social Representations of Community Multimedia Centres in Mozambique

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Abstract

UNESCO Community Multimedia Centres are a specific model of public access to Information and Communication Technologies (ICT). These venues are conceived to address the information needs of underserved and marginalised communities in emerging and developing countries. They are composed of a community radio station, which broadcasts in local languages and is managed by local people, along with a telecentre, a place where people can access computers, the Internet, and other services such as offline content collections, photocopier and fax. The model was designed as an ICT for development (ICT4D) initiative, aimed to bridge the digital and knowledge divides experienced within remote communities.

Community Multimedia Centres (CMCs) can be defined as a top-down, off-the-shelf solution, designed on communities' behalf and replicated in a variety of countries. This one-size-fits-all kind of intervention has characterised most of the first wave of ICT4D projects, and was, in later time, criticised in favour of more participatory approaches. Top-down approaches are believed to originate mismatches between design assumptions and observed realities. Yet, CMCs and analogous public access to ICT projects, still receive considerable attention within the field, and huge investments are still made by governments and international organizations to support and create them.

Purpose

This research explores the phenomenon of CMCs in Mozambique by investigating Social Representations (Moscovici, 1961) that different stakeholders' have of them. Social Representations can provide an integrated view of CMCs that give voice to local perspectives without neglecting to take into account the initiating agencies' expectations. Social Representation theory is, thus, proposed as a suitable theoretical framework to operationalize the gaps between designs and realities that too often affect ICT4D project sustainability.

Methods

This research was conducted by using a mixed methods approach. CMCs of 10 Mozambican provinces were investigated by conducting 232 interviews with representatives of initiating agencies, local staff members, CMC users (both the radio and telecenter components), users of the community radio only, and community members who did not use the CMCs. Photo-elicitation was also used, which is an underexplored technique in ICT4D, and was employed for data generation with members of the staff and CMC users. Following the analysis of transcribed

interviews, different data analysis methods were employed on both the visual and the discursive data generated, including co-occurrences of the lemmas used by interviewees and inductive and deductive content analyses. The combination of these different techniques allowed to gain in-depth insights and to triangulate research outcomes. Outcomes of the analyses are presented in three journal articles included in this work.

Furthermore, a systematic literature review on the use of Social Representations Theory in ICT4D and adjacent domains was performed, which sheds light on the potential that the theory has for the field.

Outcomes and Implications

This work makes a case for approaches that include contextual realities and local actors in the design of ICT4D interventions, and validates Social Representations as a suitable theory in the field. Also, it proposes a viable methodological strategy able to grab the complexity of the local context. Overall, the theoretical and methodological frameworks employed generated valuable outcomes, which confirm and increase the literature about public access to ICT venues. Outcomes from this work will inform academics, as well as practitioners and policy makers about the way CMCs are accommodated into different social actors' universes of meanings and practices, and about meaningful improvements to be enacted into the local context.

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Caminante, no hay camino, el camino se hace al andar.

(And it will be beautiful).

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Acronyms

BRICS	The association of five major emerging national economies: Brazil, Russia, India, China and South Africa
CAICC	Centro de Apoio à Informação e Comunicação Comunitária (Community Information and Communication Support Centre)
CIUEM	Centro de Informática da Universidade Eduardo Mondlane (University Eduardo Mondlane Informatics Centre)
CMC	Community Multimedia Centre
CPInfo	Comissão para a Política de Informática (Commission for the Politics of Informatics)
ICT	Information and Communication Technologies
ICT4D	Information and Communication Technologies for Development
IDRC	International Development Research Centre
INCM	Instituto Nacional de Comunicação de Moçambique (National Institute of Communication of Mozambique)
MCT	Ministerio das Ciencias e Tecnologías de Moçambique (Ministry of Science and Technology of Mozambique)
MELISSA	Measuring E-Learning Impact in primary Schools in South African disadvantaged areas Project
NGO	Non-Governmental Organization
PARPA	Plano de acção para redução da pobreza Absoluta (Mozambican Action Plan for Absolute Poverty Reduction)
PAV	Public Access to ICTs Venue
RE-ACT	Social Representations of Community Multimedia Centres in Mozambique and Actions for Improvement Project
SDC	Swiss Agency for Development and Cooperation
SNSF	Swiss National Science Foundation
SR	Social Representations
SR & Dev	Social Representations and International Development
SR & ICT4D	Social Representations and Information and Communication Technologies for Development

SR & ICTs	Social Representations and Information and Communication Technologies
SRT	Social Representations Theory
STIFIMO	Programme of Cooperation in Science, Technology and Innovation between Finland and Mozambique
TDM	Telecomunicações de Moçambique (Telecommunications of Mozambique)
UEM	Universidade Eduardo Mondlane
UNDP	United Nations Development Program
UNESCO	United Nations Organization for Education Science and Culture
USI	Università della Svizzera italiana
WSIS	World Summit of the Information Society

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Introduction

... the word participation does not rhyme much with efficiency. This does not mean it is to be sacrificed, as it was in the past, in order to achieve visible results. [...] Also, it is not viable to use the canonical quantitative criteria to read its results...(Capuano, 2013, p.16)

This research embraces the domain of Information and Communication Technologies for Development (ICT4D), focused on how Information and Communication Technologies (ICTs) can help socio-economic development of emerging and developing regions or of underprivileged social groups. ICTs are considered to have an enormous potential to make a difference to the life of marginalised communities. However, they "have the potential either to increase inequalities or to reduce them, depending on the social, political and economic contexts within which they are introduced" (Unwin, 2009, p. 7).

The importance and value of the social context is too often neglected when designing and implementing ICT4D interventions. "Design-reality gaps" (Heeks, 2002) are frequently among the causes for projects failures, missing to consider local dynamics and socio-cultural realities. Scholars recognised that top-down approaches are still dominant in ICT4D over studies employing bottom-up participatory approaches (Gómez, 2013).

Telecentres are no exceptions. Public venues to allow access to ICTs to communities in underserved and marginalised areas, telecentres are considered archetypical ICT4D initiatives meant to bridge the digital divide, spread the socio-economic benefits of ICTs (Heeks, 2008), and enable public access to the Information Society (Peña-López, 2013). Projects involving telecentres have been deployed all over the wold, and have been both treated with enthusiasm and labelled as failures along their history (Rega, 2010b). Nevertheless, they still receive considerable attention both from practitioners and academics (see: Gómez, 2013), and huge investments in their directions are still made by governments and international organizations.

This research focuses on Community Multimedia Centres (CMCs), a particular kind of public access to ICTs venues (PAVs) initiated by UNESCO in 2000, which bring together the services of a telecentre, and a community radio broadcasting in local languages and managed by local people. CMCs were initially established to fulfil the communication needs of underserved communities in different countries of Asia, Africa and Latin America (Creech,

2006; UNESCO, 2004). In Africa, Mozambique was chosen as one of the three countries for a scale-up of the project, given the positive outcomes of its pilot implementation.

The aim of this research is to propose and validate a theoretical framework to include local perspectives in ICT4D, in order to operationalize the theorised design-reality gap and to respond to the need of more studies that test and formulate theories in the field (Gómez, 2013). To do so, it proposes to study Mozambican CMCs by adopting the theory of Social Representations (SRT) (Moscovici, 1961), a socio-psychological construct introduced in France by Serge Moscovici and used to study contemporary societies phenomena (Wagner et al., 1999). The theory is still underexplored, yet promising, in ICT4D (see: Bailey & Ngwenyama, 2011; Rega & Van Zyl, 2011; Rega, 2010a; 2010b). This study has the ambitious purpose to show the suitability and to validate the use of SRT in ICT4D. A further aim is to propose a research strategy that is suitable to assess Social Representations in ICT4D, proposing novel methods to gather and analyse data for social representations in ICT4D investigations, and reflecting on their benefits.

Thus, this study intends to contribute to the literature about ICT4D at three different levels:

1. First, it aims to offer relevant insights about CMCs in a context, Mozambique, which has not been extensively studied so far. Outcomes from this research could serve to both academics and practitioners in the field of public access to ICTs, especially in developing and emerging regions of the world;

2. Second, it aims to understand whether SRT could be an appropriate, informative, and operational theory within the domain of ICT4D;

3. Finally, it aims to propose and adopt novel methods of data generation and data analysis in terms of social representations applied to ICT4D.

This dissertation owes its existence to two works previously conducted at Università della Svizzera italiana. First, Rega's doctoral thesis (2010b), which first proposed the use of SRT to study telecentres. Rega's study was an inspiration and opened the path to conduct my research. Second, this dissertation builds on the back of RE-ACT (*social REpresentations of community multimedia centres and ACTions for improvement*), a three-year research and cooperation project run from November 2010 to February 2014, in partnership between the

NewMinE – New Media in Education Lab of the Università della Svizzera italiana, and the Department of Mathematics and Informatics and the Centre for African Studies of the Universidade Eduardo Mondlane, Maputo, Mozambique. RE-ACT had two main interconnected goals: to investigate conceptualizations of CMCs in Mozambique by different stakeholders, and to design and implement actions to improve the performances of the CMCs involved in the project. The first part of the project, the study of CMCs conceptualizations, was meant to inform the second part, the design of the improvement actions. Finally, the project aimed to create a tool to analyse local peoples' perceptions and appropriation of CMCs, thus contributing to CMCs' social sustainability (see: Rega, 2010a; 2010b) and to provide for the scarcity of a shared and established theoretical frameworks in ICT4D (see: NewMinE, New Media in Education Lab, 2013).

This dissertation is cumulative, and includes three journal articles as part of its outcomes chapters (*Chapter 4*). The first three chapters of this work, instead, introduce the research in the broader literature of ICT4D, describe the context where the research was undertaken, and analyse the potential of the theory adopted for the field.

Chapter 1 introduces the research gaps in ICT4D literature that this research aims to answer. First, it explains the need for more contextual-sensitive approaches in ICT4D. Scholars have already argued for this need (see: Irani, Vertesi, Dourish, Philip, & Grinter, 2010; Kleine & Unwin, 2009; Tedre, Sutinen, Kähkönen, & Kommers, 2006). However, theoretical frameworks are still needed to operationalize the so-called "design-reality gap" (Heeks, 2002; 2003) that causes many ICT4D interventions to fail. A panorama on the literature about telecentres is also given, highlighting how, to date, the topic was addressed mainly by studying their impact, their uses, the barriers to their adoption, and their economic sustainability. The situation of public access venues in Mozambique and the history of CMCs in the country is described in the last part of the chapter.

Chapter 2 is dedicated to a presentation of the theory of social representations and to an analytical research on its use in ICT4D and the adjacent domains of ICTs and International Development. Gaps, ways forward and possibilities for its application to ICT4D are identified and proposed.

Chapter 3 presents the research design adopted for this research, including a detailed description of the 10 CMCs participating in the study and a reflection on the methods employed in terms of both the theory of social representations and the field of ICT4D.

A final chapter (*Chapter 5*) draws the conclusions of this work, considering some limits and suggesting further line of research to be undertaken.

1. Public Access to ICTs in Mozambique

The purpose of this chapter is threefold: first, it will introduce the research at hand in the broader literature of Information and Communication Technologies for Development (ICT4D), highlighting the need for approaches that consider and build on the analysis of the local context in which projects are conducted. Second, it will present a brief panorama of the vast literature about public access venues, in which this study is situated. Finally, the chapter will end with an overview of the geographical context considered in this research: Mozambique, its telecommunication policies, and the history of Community Multimedia Centres in the country.

1.1. ICT4D: Where are we going?

The field of Information and Communication Technologies for Development (ICT4D) studies how Information and Communication Technologies (ICTs) can be applied to foster socio-economic development in developing and emerging regions of the world, as well as within underprivileged and underserved communities (Unwin, 2009). ICTs are considered to have an enormous potential to make a difference to the life of marginalised communities and people living in the developing world. According to Heeks (2008), ICTs can integrate isolated communities into the digital era. Unwin (2009) adds that they can support rural development and improve the lives of poor and marginalised communities.

However, authors also recognise that the enthusiasm associated with ICT4D "has often been exaggerated and misplaced" (Unwin, 2009, p. 360), as many projects in ICT4D have been reported to fail or not reach the desired outcomes. Critiques from the interior of the same domain have been appearing, and scholars started to question whether ICTs work for reducing inequalities or actually increase them (ibid.). This leads to numerous reflections and meta-studies performed on the domain, and consequently, to its "dramatic" maturation (Gómez, 2013).

According to Heeks (2008), the literature of ICT4D for much of the late 1990s and early 2000s was mainly centred on the need to promote information access, bridge the digital divide, and facilitate digital inclusion. From then on, various "innovation models" were incorporated, identified by the author with the three modalities of "pro-poor, para-poor, and per-poor efforts" (Heeks, 2008, p. 29). *Pro-poor* efforts occur outside of disadvantaged communities, and are mostly concerned with interventions on their behalf, often causing a

mismatch between designed assumptions and observed realities (Heeks, 2002; 2003). Pro-poor initiatives characterised mostly, but not only, the first phase of ICT4D projects. According to the author, however, there might still be a space for them in the maturation of the field.

Para-poor efforts occur alongside communities and comprise more participative and engaged processes. Para-poor efforts represented a key shift for ICT4D, and since then, participatory approaches have acquired importance in the efforts for sustainable development (David, Vannini, Rega, & Cantoni, 2013; David, Vannini, & Sabiescu, 2013; Heeks, 2008; Van Zyl & Vannini, 2013). Lastly, *per-poor* efforts represent pure "bottom-up" initiatives driven from within the communities they intend to help. Hardly a possibility in the 1990s, when underprivileged communities had insufficient contact with ICTs, recently some activities of the kind have been blooming. In 2008, Heeks noticed that much of per-poor activity was going unnoticed, and the few known examples were mainly anecdotal (Heeks, 2008).

A recent analysis about the evolution and state of the art of ICT4D was performed by Gómez (2013), who examined the literature from 2000 to 2010. Gómez notices that the ICT4D literature responds to predominantly descriptive research questions, aimed to understand whether ICTs interventions are producing or influencing social empowerment and change.

Approaches to research show changes along the years. Even if top-down approaches are still dominant, accounting for three-quarters of the studies included, bottom-up and participatory approaches are increasing. According to the author, this tendency shows a maturation within the field (ibid.). To this respect, Kleine and Unwin (2009) note that "despite many warnings [by scholars], the majority of ICT4D initiatives funded by donors and governments are still bent on propagating top-down messages" (ibid., p. 1055), which they identify as one of the critical points of ICT4D practice. Regarding the relation between ICT and society in the literature, Gómez (2013) notices that the majority of studies (59%) apply a technological approach, and only a small proportion (16%) reveal a predominantly social approach, which, however, is increasing over time.

On the other hand, Gómez (2013) notices that interpretivist paradigms in ICT4D research are far more adopted than both positivist and pragmatic ones, even if pragmatism is growing. Also, studies employing participatory approaches are still few but increasingly

present. Regarding methods employed, Gómez's study shows that qualitative methods are mostly used, in accordance with the interpretivist paradigm. The use of mixed methods, however, is growing, and it will probably become the dominant approach in coming years if the trend remains stable. Even if technology-focused studies are predominant, quantitative methods and positivist approaches are the least used. Gómez also shows that there are few conceptual studies that are focused on testing and formulating theories or methods.

As far as recommendations are concerned, the most common ones are, again, mostly technology-oriented, and argue for better or more ICT infrastructure. Secondly, they argue for stronger collaboration and participation with local stakeholders. Very few studies explicitly declare that they aim to contribute to theory and policy recommendations. Even fewer studies recommend to improve communication in projects and contribute towards raising awareness on development topics.

Finally, Gómez analyses the most tackled domains of ICT4D and argues that the two domains that attracted the higher number of studies are business (ICTs for economic and financial development) and empowerment of disadvantaged communities/minorities. The author argues that there is room (and need) to integrate both domains together as important dimensions of development in ICT4D. Kleine and Unwin, on their side, propose three steps forward for the domain of ICT4D, which go in similar directions to Gómez's analysis (Kleine & Unwin, 2009). They are:

1) Crafting collaborative partnerships. The authors are critical about the dangers of the private sector, with which very few partnerships have delivered effective benefits for the ones who needed the most. They argue, instead, for engaging and including all relevant local stakeholders, so that synergies can be created, and capacities developed and shared;

2) Looking beyond economic growth. Economic growth should not be the only development indicator or development enabler that ICT4D should look at. Development is concerned also with empowerment and social and political agendas, and still much work needs to be done in this direction. The idea is further stressed by Kleine (2013);

3) Scaling-up, sustainability, effective business models. Economic issues, however, are hard to be discarded. In apparent contradiction with point number two ("looking beyond economic growth"), the authors argue

there are too many initiatives designed as pilots, which disperse energies and learning. Also, implementation of ICT4D projects is too often at costs that people cannot afford, which undermines the possibility of making these projects sustainable.

1.1.1. The need for a stronger focus on the context

From this brief reflection on the literature, some themes emerged that are connected to the main focus of this work: among the others, the need to look beyond mere economic and technological indicators and to focus more on social aspects of ICT4D interventions; the importance to involve and empower local people in the design of their own development initiatives; and the necessity for a stronger consideration of the local context within the design and implementation of ICT4D interventions. Top-down approaches to the field have been established since the beginning, and even if in many cases did not proof to be effective and sustainable, they are still the predominant framework of intervention.

Top-down approaches often do not consider the diversity and distinctiveness of the local contexts in which they take place. To this respect, Heeks theorises what he calls the "design-reality gap", described as the difference between what has been designed and foreseen within the project plan and the reality of the context on the ground (Heeks, 2002; 2003).

Design-reality gaps are "archetypal situations in which failure is likely to occur" (Heeks, 2003, p. 1). Heeks proposes seven dimensions that should be analysed in order to understand potential gaps (and their size) and to adjust the design of ICT4D interventions accordingly. These dimensions include analysing the processes and structures of all stakeholders, their skills, their objectives, and their values, which may differ considerably and lead to important misalignments, and ultimately, to failure. Also, country/context-related differences are to be taken into account, as solutions pulled off by other countries are often not likely to succeed when exported. The author argues that mapping and understanding the reality and customising solutions for the diverse contexts are techniques for risk reduction.

The importance of taking into consideration contextual realities and culture is fundamental in Heeks' (Heeks, 2002; 2003) as well as in Unwin's (2009) works. Unwin agrees on the fact that interventions should be appropriate for the specificities of the considered circumstances, that "one-size-fits-all" approaches are rarely appropriate and that

"excessively top-down, externally driven and supply led" initiatives have driven to a high percentage of failures in ICT4D (Unwin, 2009, p. 363-364).

Different authors have been advocating for the inclusion of context in ICT4D research and project deployment, criticizing deterministic and positivists accounts for their lack of attention to local specificities, local culture, and resistance to technology (Brunello, 2010; Irani, Vertesi, Dourish, Philip, & Grinter, 2010; Johri & Pal, 2012; Tedre, Sutinen, Kähkönen, & Kommers, 2006), and arguing for the importance of building on contextual issues for designing and researching ICT4D projects, advocating for a conceptualization of this "localizing problem" (Van Zyl, 2013, p. 60),

Scholars in computer systems design and human computer interaction in developing countries advocate for the importance of customising systems and learning from the different contextual realities, in order to implement solutions that serve developing and marginalised realities. The concept of "ethnocomputing" (Tedre et al., 2006) goes in this direction. Ethnocomputing is defined as an approach that recognises that science and technological development are both influenced by and influencing society and culture. Society does not only adapt, but also shapes the development of ICTs, which, on their hand, can never be culturally and socially neutral. Technological systems are socially produced and constantly negotiated, implicating that ICT interventions cannot be investigated without understanding the complexity of the context in which they develop.

In return, taking local knowledge into account benefits advances in computer sciences research, which must learn how to use local knowledge, shape solutions, and design ICTs around it. Local knowledge is referred to as "indispensable" for both local context and content (Vesisenaho, Kemppainen, Islas, Tedre, & Sutinen, 2006).

This view is openly in contrast with the positivist paradigm, dominant in computer sciences, which leads easily to a technological determinism that understands technology as something aseptic and separated from the context, which develops independently from the society and, then, affects it. The term *shaping,* as opposed to *adapting,* technology for contextual needs is used, for it carries a participatory, bottom-up nuance and a stronger focus on local social requirements rather than on technological ones. Ethnocomputing is founded on considering local issues and close collaboration with local stakeholders as its key concepts (Duveskog, Kemppainen, Bednarik, & Sutinen, 2009; Lund & Sutinen, 2010; Sutinen & Tedre, 2010). Ethnocomputing is considered an answer to the need for technological

advancements that do not undermine local culture and traditions, and rather, are able to support local identities (Tedre et al., 2006).

Irani and colleagues' suggest a shift in the way ICT projects are designed (Irani et al., 2010). Their concept of "postcolonial computing" suggests that a shift is needed in ICTs development projects, not to better design ICTs for other cultures, but to understand "how all design research and practice is culturally located and power laden" (Irani et al., 2010, p. 1312). They also discuss how culture shapes experience and everyday interaction, and at the same time, is generated through them. In this sense, technology becomes meaningful in everyday practices depending on the social reality it enters. The authors advocate for a dynamic model of culture as the only way to understand how ICT design is adopted and adapted. They also support participatory approaches in design, in which users are not only the passive end consumers and "repositories of lore to be mined" (Irani et al., 2010, p. 1318), but active participants and partners in the design process.

The concept of "capable and convivial design" also goes in the same direction (Johri & Pal, 2012). Johri and Pal argue for a design-based approach for ICTs in developing countries that is contextually relevant, that understands the social, economic, and physical context, and that is able to empower users. The authors consider that opening to diversity in ICT design will promote reflection within the field, which they consider a critical point. Building on Sens' capability approach (Sen, 1999) and Illich's concept of conviviality (Illich, 1973), Johri and Pal emphasize the importance of empowering local people and the importance of letting them choose their own engagement with technologies, according to their values. The same concept is also advocated in Kleine (2013) and Qureshi (2011).

Finally, the authors argue for a "middle ground" approach to technologies (Johri & Pal, 2012, p. 72) that lays in between the deterministic one, which lacks attention to the context in which technologies are to be implemented, and critical accounts, which would often be too pessimistic in stressing more technologies shortcomings than benefits.

1.1.2. The approach of this work to ICT4D

The brief review of the literature presented up to this point highlights a need to include issues of local realities in the design of ICT4D research and a stronger awareness of the importance of including and empowering local stakeholders. While the number of projects

that include bottom-up and participatory approaches is growing, studies, reflections, and theoretical and methodological frameworks are still needed.

This work aims to address specifically this need, by proposing a theoretical and methodological framework to operationalize design-reality gaps: the study of different stakeholders' Social Representations (Moscovici, 1961) of ICT4D interventions (see Chapter 2). The theory permits not only consideration of contextual specificities, but also includes allowing for different social groups' perspectives, thus permitting to find mismatches in conceptualisations and expectations among all stakeholders. Clearly turned towards social rather than technological aspects of ICT4D projects, the study is in line with the literature that considers reality as a dynamic model in negotiation, in which the technology is perceived and reshaped constantly.

Finally, the theoretical and methodological frameworks proposed in this work, while giving interesting insights and outcomes per se, are suitable for iterative and collaborative design-oriented approaches (Aguirre, Vannini, Rega, & Cantoni, 2013; Van Zyl & Vannini, 2013) and to operationalize the theorised design-reality gap (Heeks, 2002).

1.2. Telecentres: a brief overview

Telecentres are public venues that provide shared access to ICTs, usually (but not only) in underserved areas or for underprivileged communities. The first telecentres were established in two villages of Sweden in the 1980s, with the purpose to connect remote areas, promote access to relevant information for development, thus offering an instrument for rural emancipation (Best, Thakur, & Kolko, 2010; Kleine, 2013; Parkinson & Lauzon, 2008). Access to information is considered a key element for promoting (self-)development (Unwin, 2009), which, from being considered a "need", has become to be considered a "right" (Kleine & Unwin, 2009):

> *"Within the field of ICT4D there has been almost unanimous acceptance of the principle that people have the right to knowledge and information" (ibid., p. 1056)*

Telecentres are considered archetypical ICT4D initiatives meant to bridge the digital divide, spread the social and economic benefits of ICTs (Heeks, 2008), and enable public access to the Information Society (Peña-López, 2013). They most often belong to the initial "pro-poor" phase of ICT4D (Heeks, 2008), seen as "off-the-shelf", "one-size-fits-all" (Heeks,

2008; Unwin, 2009) solutions that could be reproduced from western realities and replicated in a variety of developing countries.

A number of types of telecentres have been evolving over the years. Colle (2000) classifies them according to a combination of nine binary variables. Telecentres can be:

1. Multipurpose or narrow-focused, according to the number of services offered;
2. Community-based or establishment, according to their ownership and management;
3. Stand-alone or attached to other facilities (e.g.: a stand-alone telecentre vs. a telecentre within the premises of a library);
4. Thematic or universal, according to the specific needs they want to respond to or the groups they aim to serve;
5. Independent or networked, depending on their belonging to any regional, national or international network;
6. Profit- or service-oriented, depending on their and nature;
7. Publicly or privately funded, depending on the entities that finance them;
8. Commercial or free, according to their business model;
9. Urban or rural, according to the context they are located.

Projects involving telecentres were both treated with enthusiasm and labelled as certain failures along their history (Rega, 2010b). Nevertheless, telecentres and other public access venues (PAVs) initiatives still receive considerable attention both from practitioners and academics (Gómez, 2013), and huge investments in their directions are still made by governments and international organizations (see section 1.3.4). Even the growing trend towards mobile phones did not fade away the interest in telecentres, and public access has not been replaced by private, mobile technologies (Bar et al., 2013; Gómez, 2013; Rega, Vannini, Raimilla, & Fauró, 2013; Sey et al., 2013; Vannini, Rega, Sala, & Cantoni, 2013a).

A number of studies have been conducted on telecentres. First, many efforts have been done to understand and overcome the concern on their economic *sustainability*. Scholars have still not reached a consensus on whether telecentres should be financially sustainable or their use should be socially supported in the same way as libraries are (Kleine, 2013). Best and colleagues argue that, alike other ICT4D initiatives, telecentres should be able to sustain themselves financially (Best et al., 2010). The Brazilian and Chilean models of telecentres

advocate for a service that is free of charge for the users and sustained by taxes (Kleine, 2013). Mixed models are also proposed, where some services that are more connected with development are offered for free to the community, while others are paid (Rao, 2008). At the same time, scholars present contradictory outcomes on the sustainability of telecentres in rural areas, where people have less financial means, the demand of advanced services is scarcer, but competitors are less (Best & Kumar, 2008; Kuriyan & Toyama, 2007).

Kleine (2013) maintains that a different view of development lays behind the different existing attitudes to the ideal telecentres' business model. She reckons that a neoliberal vision of development, claiming that telecentres should be financially sustainable and offer services for which people are willing to pay, may generate contradictions and may leave behind the people whom telecentres strive to benefit at most:

> *The entrepreneurial model […], fits most easily in a neoliberal view of development, relying heavily on the market forces. (Kleine, 2013, p. 87).*

But sustainability of a telecentre does not depend merely on its finance. There are three more kinds of sustainability identified in the literature (Ali & Bailur, 2007; Bailey, 2009; Bailur, 2006; Rega, 2010b):

1. Technological sustainability, related to technology maintenance. This is very much related to financial sustainability, representing usually the main cost for a telecentre;

2. Social sustainability, referring to the support deriving from the social impact telecentres have on the communities they serve;

3. Political sustainability, referring to the support by policy-makers and regulators.

Scholars have also studied the *users* and *usages* of telecentres. With some differences depending on the context in which telecentres operate, the majority of the studies agree that telecentre users are mainly young, male, and educated people (Best & Kumar, 2008; Gómez, 2011; Madon, Reinhard, Roode, & Walsham, 2009; Parkinson & Lauzon, 2008; Sey & Fellows, 2009; Sey et al., 2013) of middle socio-economic status (Bar et al., 2013; Sey et al., 2013). However, in some cases, telecentres have been found to be important social and learning spaces for women and other marginalized groups (Gómez, 2011; Kleine, 2013; Madon et al., 2009). Usages are also varied, ranging from e-literacy courses (Frix, Freistadt,

Neff, & Pal, 2009; Neff, Frix, Pal, & Freistadt, 2009; Pal, Lakshmanan, & Toyama, 2009; Pal, 2007) and search for information and access to the internet (Parkinson & Lauzon, 2008; Sey et al., 2013), to e-mail and communication (Best et al., 2010; Madon et al., 2009; Sey et al., 2013), and entertainment (Bailey & Ngwenyama, 2011; Bailey, 2009; Bar et al., 2013; Sey et al., 2013).

What scholars generally agree on is that business-related services, as well as more development-related ones, are not the most required (Parkinson & Lauzon, 2008; Sey et al., 2013). While this has generated some concern for unwished usages at the telecentres' management level (Bailey & Ngwenyama, 2011; Kleine, 2013; Rega, 2010b), scholars tend to praise more personal and entertainment-related uses. They argue that, by having fun, people can learn and improve their skills, strengthen their perception about their own capacities, connect with people, and avoid to find themselves in other, sometimes dangerous, places (Gómez, 2011; Kleine, 2013; Nemer, 2013; Rega, 2010b; Sey et al., 2013).

Barriers to the use of telecentres depend on regional differences, but general trends are identified. Some deal with venues' services and infrastructures issues: unreliable electricity (Roman & Colle, 2002), equipment failures (Best & Kumar, 2008), poor quality or lack of relevant services (Vannini et al., 2013a; Vannini, Rega, Sala, & Cantoni, 2013b), lack of local or localised content (Bailur, 2006; Colle, 2005), and scarce promotion of the services (Rega, 2010b; Vannini et al., 2013b). Others are connected to resource constraints people have in terms of time and distance (Vannini et al., 2013b). Evidence is not consistent in terms of the perception of costs as a barrier: some scholars observed that costs are indeed a barrier for people who cannot afford telecentres' services, and especially for women (Kleine, 2013; Madon et al., 2009; Vannini et al., 2013b), while others observed that costs do not constitute a barrier when the service offered is truly valued by the user (Clark & Gómez, 2011; Sey et al., 2013).

Besides, some cultural and demographic issues could intervene as an obstacle to telecentres' use, i.e.: caste (Bailur, 2006), age (Parkinson & Lauzon, 2008), literacy and education (Parkinson & Lauzon, 2008; Rao, 2008), and skills (Kleine, 2013). Additionally, some people think that the services offered at telecentres are "not for them" (Kleine, 2013; Parkinson & Lauzon, 2008; Vannini et al., 2013a).

Finally, many studies tried to assess the socio-economic *impact* that telecentres have on the communities they serve. Until very recently, scholars strived to identify and measure

them, but very often lingered on potential more than actual impacts (Sey & Fellows, 2009). A milestone study in this sense has been the Global Impact Study, conducted by the Technology and Social Change group of the University of Washington (Sey et al., 2013). Affirming that "the impact of public access cannot be measured in a generic fashion" (ibid., p. 31), outcomes from the study show that public access to ICTs has two orders of socio-economic impacts:

1. The first order is related to the positive benefits of digital inclusion, including ICTs skills development, access to (relevant) information, and access to technologies themselves;

2. The second order refers to socio-economic impacts, and can be broken up into six levels: education, culture and language, governance, health, employment and income, and communication and leisure. Outcomes show significant impact of public access venues in all these areas.

1.2.1. Contribution for Telecentres

This work will contribute to the existing literature on telecentres by proposing and validating a theoretical and methodological framework, which is able to listen to the voices of all different stakeholders in the project. Telecentres have been conceived as top-down projects, following a "one-size-fits-all" solution, which was transferred in a number of different realities throughout all continents. Even if top-down approaches have been recently believed to be likely to fail, telecentres have survived, grown in number – with an estimated number of 1,200,000 venues around the world in 2012, according to telecentre.org (Telecentre.org Foundation, 2013) – and, in many cases, adapted to the local realities they operate in.

Studying telecentres' Social Representations aims to promote communication between local stakeholders and agencies that funded and initiated their programmes. This research will inform what the conceptualizations and dynamics are at the ground level, confirming or adding to the existing body of knowledge about telecentres, and compare local visions to the goals of who is investing on them, opening up a constructive dialogue. Ultimately, it aims to contribute to telecentres' social sustainability (Rega, 2010b).

1.3. The Geographical Context of this Research: Mozambique

Mozambique was chosen as a case study for this research. The country is a particularly interesting field for this research because of four main reasons:

1. Despite the exponential growth of its economy, Mozambique is considered one of the least developed countries in the world (ranked 185° in the Index of Human Development proposed by the United Nations);

2. The government of Mozambique supports telecommunication investments and considers ICTs important instruments for the reduction of poverty in the country. This is reflected by the fact that Mozambique has been one of the first countries in sub-Saharan Africa that endorsed a telecommunication policy, and by the huge investments in the ICTs sector that the government, thanks to international economic aid, is sponsoring;

3. In 2003, Mozambique was selected as one of the three African countries for a scale-up phase of the initiative of Community Multimedia Centres (CMCs), a special kind of public access venue that combine telecentres and community radio facilities. The programme of CMCs was developed and launched by UNESCO and the Swiss Development Cooperation;

4. When my research project started, the country was still rather unexplored in terms of research in ICT4D if compared to Anglophone African countries.

The following sections will provide a quite detailed description of the context in which the research has taken place.

1.3.1. Country Facts, Policies and Universal Access

Mozambique's independence dates back to 1975, as a result of a 10-year armed conflict against the Portuguese colonialism. Immediately after its independence, the country faced a 16-year civil war that devastated its economy (Etta & Parvyn-Wamahiu, 2003; Mabila, Nhabinda Mboane, & Mondlane, 2010). The political stability that has followed the peace agreements, signed in Rome on October 4th, 1992, attracted significant investments in and foreign aid to the country (Mabila et al., 2010; Meredith, 2006). Mozambique is now on the list of the new emerging economies of Sub-Saharan Africa, and the country economy registered an annual growth of 8.1% in the third quarter of 2013 (World Bank, 2014). Figure

1.1 shows the annual gross domestic product in the country from 2004 to 2012 compared to the aggregate of others sub-Saharan developing countries: Mozambique shows a stable growing tendency.
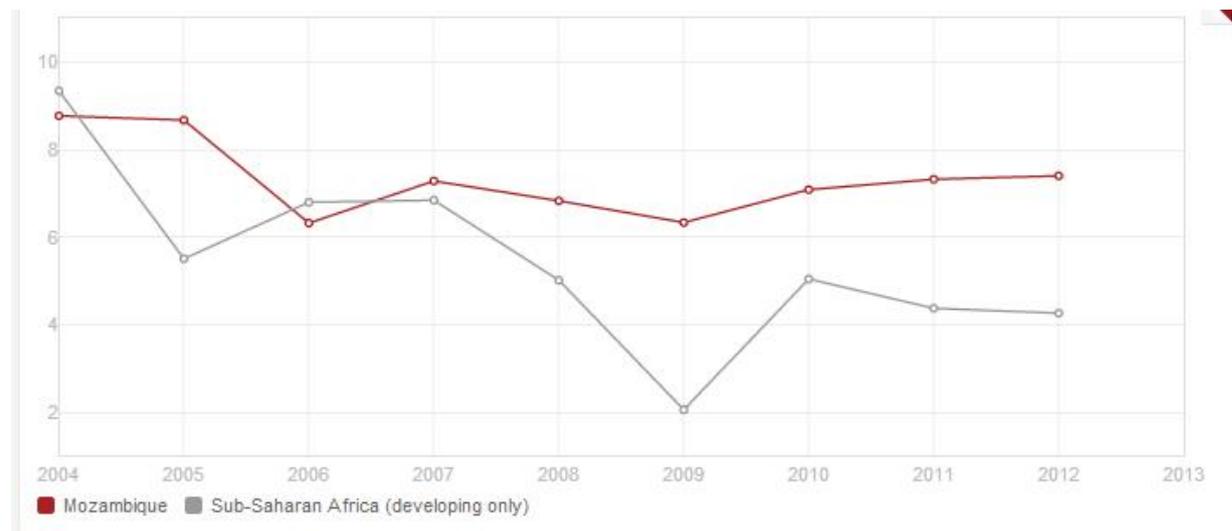
Figure 1.1: Annual GDP growth in Mozambique compared with Sub-Saharan Africa (only developing countries). Adapted from the World Bank country data (World Bank, 2013).

Despite this growth, Mozambique is among the world's most aid-dependent countries, 54% of its population still lives in absolute poverty (Vieira Mario, Minnie, & Bussiek, 2010), and the country is ranked third from last in the Human Development Index (UNDP, 2013). The government's main instrument for reducing poverty is the Mozambican Poverty Reduction Action Plan (PARPA), which identifies priority sectors of action as follows (IMF, 2005; UNESCO, 2004):

   (i)   The social sector (including improvements in education and health);
   (ii) Infrastructures (addressing mainly roads, energy, and water issues);
   (iii) Agriculture and rural development;
   (iv) Justice (governance and legality); and
   (v)   Macro-economic and financial policies.

The plan also defines strategies of action, which include the use of ICTs as an instrument to achieve these tasks. Expanding access to computers and the internet for the benefit of the rural population and increasing knowledge through improved education systems that make use of ICTs is seen as a tool to pursue the development of the country. The strategy for rural development includes strengthening information and communication in the rural areas as one of its main goals.

Therefore, the installation of computer laboratories in both schools and rural institutions, such as telecentres and Community Multimedia Centres were among the priority measures to be implemented (Conselho de Ministros da República de Moçambique, 2007; UNESCO, 2004), and are still today.

The role of ICTs for development, and the improvement of telecommunication infrastructures, are regarded as central in the policies of Mozambique (Gaster, Cumbana, Macueve, Cabral Domingos, & Mabila, 2009). The country has established an ICT Policy Commission (Comissão para a Política de Informática – CPInfo), whose the main objectives are: to raise people's awareness of ICTs and their potential, combat absolute poverty, raise living standards, provide universal access to information, improve education standards, and reduce existing imbalances between regions, urban and rural areas, and among different segments of society (UNESCO, 2004).

Mozambique has also an independent telecommunication regulatory authority (the Instituto Nacional de Comunicações de Moçambique, INCM), established in 1992 to regulate both telecommunications and postal sectors (Etta & Parvyn-Wamahiu, 2003; Mabila et al., 2010).

The government of Mozambique created a Universal Access Fund in 2004 with the intent of pursuing universal access in the country. The fund is managed by the INCM. The number of projects implemented to reach its scope, however, is believed to be still inadequate for the needs and opportunities of the country (Mabila et al., 2010).

The National ICT policy, approved in 2000, was declared to be outdated in 2010 and is now under revision (INCM, 2014; Mabila et al., 2010). However, this policy marked an important step for Mozambique, which became a reference point for countries in the region and beyond (Gaster et al., 2009). Universal access to ICTs remains one of the main priority challenges for the country, and CMCs are one of the strategies individuated to achieve universal access.

In accordance to the PARPA, a competitive telecommunications sector has been promoted (UNESCO, 2004), and the marked was liberalized in 2007 (Mabila et al., 2010).

Nevertheless, only one fixed line operator is active in the country: Telecomunicações de Moçambique (TDM). Two mobile companies, instead, were operating when the interviews for this study were conducted: the Mozambican M-Cel, operating since 1997, and the pan-African Vodacom, operating since 2003. A third operator, Movitel, entered the market in 2012. Competition in the mobile sector is very high, and huge marketing investments are done (Mabila et al., 2010). Mobile companies' advertisement is pervasive in the country, as figure 1.2 shows.

Figure 1.2: Mobile telecommunication companies advertisements in rural and urban areas of Mozambique.

Both competition and the dramatic growth registered within the mobile sector concurred to activate improvements in mobile services. On the contrary, fixed line services provided by TDM suffer frequent interruptions in the northern regions of Mozambique, due to problems in the backbone fibre-optic cable (Mabila et al., 2010). Mobile penetration in the country is growing at a fast pace: recent statistics show how it passed from 2.6% in 2003 to 28.5% in 2009. Fixed network density, instead, remains stagnant (ibid.).

Access to other communication media include radio and TV broadcasting. Radio is the most important information and communication vehicle in the country. This is mostly true for communities living in rural areas. Radio broadcasting is considered to reach approximately 70% of the population (Mabila et al., 2010). Accessibility and affordability in terms of costs and coverage and local languages programming are the main reasons for the

success of this medium (Mabila et al., 2010; Vieira Mario et al., 2010). Four national TV channels are also transmitting in the country. Their coverage is much smaller than that of the radio, estimated to reach only 15% of the population. The reasons for this difference lay in the cost of TV sets, which is much higher than the one of a radio apparatus, in electricity supply, which is not granted in all areas of the country, as well as in the fact that all channels transmit only in Portuguese (Mabila et al., 2010; Vieira Mario et al., 2010).

There are 27 active newspapers in Mozambique, including some fax newssheets (Vieira Mario et al., 2010). All of them are written in Portuguese, and their production and consumption is mainly concentrated in the capital, Maputo. High illiteracy rates and language issues are the main barriers to newspapers consumption. Besides, rural areas receive them with great delays, sometimes even one week after their publication (ibid.).

Despite all public efforts and investments, which are necessary to bridge the digital divide (Peña-López, 2009), much work has still to be done to guarantee universal access in the country:

> *The predominant use of radio and the advance of the mobile phone are obvious, as is the gap between urban and rural areas in everything except radio use (Gaster et al., 2009, p. 5).*

1.3.2. Public Access Venues in Mozambique

Telecentres were introduced in Mozambique in 1999, in the locations of Manhiça and Namaacha, as part of a project in partnership between the Centre of Informatics of the University Eduardo Mondlane (CIUEM) and the Canadian International Development Research Centre (IDRC) (Etta & Parvyn-Wamahiu, 2003), within the framework of the Acacia pilot project (Gaster, 2001). Both telecentres were located in the southernmost region of the country, in the province of Maputo and easy to reach from the capital.

According to Gaster (2001), telecentres were established in Mozambique to reach the most underserved communities and to let Mozambique become an actor for its own development:

> *The key concern was to find ways of extending access to, and use of, information and communications technologies (ICTs) for those unable to afford individual ownership of the technology; apply these to developmental applications for the poorly educated, unemployed and underemployed; and ensure that Mozambique was not merely a consumer of content from the developed world, but a producer of material for its own indigenous needs (ibid., p. 120).*

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According to a study conducted in 2000, the services offered by these telecentres were: access to computers, internet, and e-mail, word processing, CD-ROM content, computer training, photocopies, scanning and faxing of documents, telephone calls, television (a television set receiving national channels), video cassette recorders, printing, and library services. Information that locals would have liked to be available concerned: education, health care, sports, government, trade, agriculture, religion, culture, weather, and entertainment (Etta & Parvyn-Wamahiu, 2003). However, the most used services were public phones, fax, photocopying and binding, use of the library, TV, and video. Computers and the internet were not among the most popular services at the beginning of telecentres' history in the country (Gaster, 2001).

Great attention was paid to telecentres' management and training since the beginning: while their ownership, as well as the services they offered, was not pre-established and depended on their location, local communities were meant to have an important role in it. Some were owned by local NGOs or associations and others by schools. Besides, the dialogue on telecentres in the country started with a focus on rural development, which warned against regarding them as merely technological projects:

> *The first and most important is that rural telecentres must be regarded as development projects rather than technology projects. Looking to new technologies as some kind of quick-fix to existing or development problems is fatal. By the same token, the practical and technical difficulties of establishing telecentres must not divert attention from the main goal: improving people's well-being over the long term (Gaster, 2001, p. 126).*

While research and evaluation of the impact of telecentres was scarce during the Acacia project, positive outcomes were identified, including the climate of political support at both the national and local levels, the management by a local university, and the presence of a local champion (Renken & Heeks, 2013) in one of the two telecentres. Negative factors included, instead, poor infrastructures, high costs of calls, which impeded the use of the internet in those rural areas, and the level of development of the community of the other centre, too low to permit an effective management of the telecentre (Gaster, 2001). Gaster's study concluded that it was worth investing in public access to ICTs for the rural and underserved areas of the country, or the gap between them and urban and more privileged ones would grow wider:

> *Access to ICTs must be provided by one means or another to the rural and poor of the country. There is no point arguing that poor countries cannot afford this. Those who fail to get onto the information highway will fall even farther off the map (Gaster, 2001, p. 127).*

1.3.3. Community Radios in Mozambique

Community radios are radio stations managed by local people and broadcasting in both the national and local languages. Community broadcasting is still not recognised as a specific sector. However, a number of local, not-for-profit, and community-based stations has emerged in Mozambique since 1993. According to Vieira Mario et al. (2010), there are three kinds of community radios active in the country:

1. Community radios managed by the state, through the Social Communications Institute of Mozambique (ICS);
2. Community radios established, supported, and managed by the Catholic Church;
3. Community radios initiated by international donors and national NGOs, e.g.: UNESCO and UNDP.

If we exclude the radio stations established by ICS, thus controlled by the government, the very first two independent community-oriented radio stations were established by the Catholic Church in the northern cities of Nampula (Radio Encontro) and Quelimane (Nova Radio Paz) (Vieira Mario et al., 2010). While they belong to Catholic dioceses, the stations are managed not only by religious consecrated persons, but also by representatives of local communities. In 1994, "a non-state community radio movement emerged, dominated by civil society organisations" (ibid., p. 58). Until 2006, the movement was sponsored by various bodies, including UNESCO and UNDP (UNESCO, 2004). Community radios have continued operating ever since and are now the most widespread information and communication means in the country, especially for the rural areas.

> *Together, the non-state and non-commercial local radio stations reach an audience of over one and a half million people in the rural areas, often in places where no other media exist (Vieira Mario et al., 2010, p. 60).*

1.3.4. Community Multimedia Centres in Mozambique

Community Multimedia Centres (CMCs) are Public Access to ICTs Venues (PAVs) at first established by UNESCO. According to their definition:

> *A Community Multimedia Centre (CMC) is a community-based facility offering both community radio broadcasting and telecentre services (access to internet and other information and communications technologies - ICTs). This hybrid approach is believed to provide significant support to community development by strengthening economic opportunities through information and training. Moreover, through access to and exchange of knowledge, views and beliefs, CMCs strengthen social inclusion, public participation, education, agriculture, health and other factors necessary for healthy and sustainable societies (Creech, 2006, p.6).*

CMCs are public venues working within local communities. They offer access to information and ICTs-related services through radio and telecentre services, with the objective "to foster equitable access to information and knowledge for development, reduce the digital divide and promote social inclusion" (Creech, 2006, p. 10). Their concept is founded on the idea of:

> *"...taking advantage of the synergies between radio and IT tools to contribute to local development, improving access to information and education and providing opportunities for communications, information exchange and networking among communities. CMCs can play an important role in the attainment of the Millennium Development Goals" (United Nations Organization for Education Science and Culture, 2004, p. 3).*

The model was implemented with a top-down approach in several countries. The expected direct interaction among CMCs within different countries or regions has been rather limited (Creech, 2006). At the same time, a certain degree of localization in terms of initiative, management, and processes was guaranteed, provided local communities were actively involved (UNESCO, 2004):

> *The ownership models will be flexible and diverse, decided upon case by case. The key constant factors are: active involvement by the local community in management and in activities; capacity and transparency; and clarity over management and ownership. As set out in the selection criteria, the CMC may take as its base an existing radio or telecentre, it may be linked to a local institution or NGO, and it may need the creation of an entirely new association (ibid., p.26).*

The initiative was based on the idea of adding telecentre services, and the internet in particular, to already established community radio stations or vice versa. The rationale behind

this idea was that the integration between the two components would have been more cost-effective, would benefit from the experience of pre-existing management and structures, and would have granted greater possibilities of trained human resources (Gaster et al., 2009).

The initiative of CMCs was established in 2000. The first pilot CMCs were implemented in Africa, South Asia, and Latin America and the Caribbean in 2001, and a scale-up phase of the program started in 2003 in selected countries. In Africa, three countries were chosen for the scale-up on the basis of their good performances in the pilot phase: Senegal, Mali, and Mozambique (Creech, 2006; UNESCO, 2004).

In Mozambique, the project passed through three different phases: a pilot phase, a scale-up phase, and a national programme. The first two phases were initiated by UNESCO, while the last one is being managed by the Ministry of Science and Technology of Mozambique (MCT). In 2005, UNESCO undertook an evaluation of the whole CMC initiative, concluding it was "an outstanding success [which] certainly deserves the consideration it has been given to date by UNESCO as a flagship endeavour of the Communications and Information Sector" (Creech, 2006, p.9), thus justifying the scaling up. In 2006, the Community Information and Communication Support Centre (CAICC) was established within the CIUEM, with the aim of contributing towards the expansion, consolidation and sustainability of CMCs, as well as other community-level ICT initiatives in Mozambique, in particular through promoting coordination and collaboration at all levels of the network and delivering community ICT support services.

The three phases of the CMC programme in the country were implemented in partnership with the CIUEM and are the following:

1. The *first phase* corresponds to the *pilot* initiated by UNESCO in 2001, which lasted until 2003. Four CMCs were implemented: two in southern Mozambique (by adding a community radio to the already established telecentres of Manhiça and Namaacha) and two in the centre of the country, by adding a telecentre to the already established community radios of Sussundenga and Dondo (UNESCO, 2004);

2. The *second phase* corresponds to the *scale-up* of the initiative, going from 2003 to 2009. UNESCO was still in charge of this phase, and funds for the first 20 CMCs were provided by the Swiss Agency for Development and Cooperation (SDC). This phase aimed to establish 50 CMCs in rural and

semi-rural areas, so UNESCO tried to mobilise additional resources from other agencies (including UNDP and the World Bank). At the end of this phase, 29 new CMCs were established (Gaster et al., 2009; UNESCO, 2004);

3. In 2009, the Ministry of Science and Technology of Mozambique (Ministerio da Ciencia e Tecnología – MCT) took charge of the CMCs initiative. MCT designed a so-called "new model" of CMCs, which consisted mainly in building new infrastructures and providing them with more equipment (MCT, 2008). The programme was funded by several international donors, including the Programme of Cooperation in Science, Technology and Innovation between Finland and Mozambique (STIFIMO) and the World Bank (Ministry for Foreign Affairs of Finland, Ministry of Science and Technology of, & Ministry of Science and Technology of Mozambique, 2009). Aim of the MCT was to install 75 new CMCs in five years (Gaster et al., 2009). MCT intends to continue investing on CMCs even after this third phase is off, with a final aim of providing one CMC per each one of the 128 districts of the country (ICTs Specialist at MCT, personal communication, Maputo, April 2011). As of March/April 2011, when this research took place, 34 CMCs were present in the country (Rega et al., 2011). Two years later, they were 43 (see section 3.4.1, Figure 3.1).

Table 1.1 summarises the phases of implementation of CMCs in the country.

Table 1.1: CMCs Implementations Phases in Mozambique.

Phase	Dates	Initiating Agency in charge	Intended # of CMCs	# of CMCs actually implemented	Total CMCs
Pilot	2001 - 2003	UNESCO		4	4
Scale-Up	2003 - 2009	UNESCO	50	29	33
National Programme	2009 - 2014	Ministry of Science and Technology (MCT)	75	10	43

Figures have been lastly updated in March 2013.

Undoubtedly, huge investments and efforts have been done to promote ICTs access and diffusion of information through CMCs in the country in the last 13 years, and many still are by the Government of Mozambique that firmly believes in their value for the development of rural areas. Yet, not many evaluations have been carried out in Mozambique to monitor

and improve the programme, even when MCT took responsibility of them. Recommendations done in the few studies that were performed in the first phases of the initiative included a concern on sustainability of the centres, the need for more training of staff members as relevant "infomediaries" (see Gómez, 2011; Sey et al., 2013) for the communities they serve, the need to customise and diversify the services along with local needs, and consequently, for a certain degree of autonomy of CMCs management, and the creation of local content (Creech, 2006; Gaster, 2001; Moiana, Chicuecue, Sadique, & Ilal, 2007; UNESCO, 2004).

Finally, the first programme documents referred to the initiative as an instrument for rural development to be implemented according to local needs and realities and that should have focused on the creation and transmission of development-relevant content (Creech, 2006; UNESCO, 2004). This was in line with the literature arguing that human, as well as digital development cannot be only a matter of access to infrastructures (Peña-López, 2012). However, the new phases gave more relevance to economic, infrastructural, and technological aspects of the implementation (MCT, 2008). While this fact indicates a deeper awareness of the difficult conditions CMCs are facing based on several years of experience, there is a concern, which I share, that new actors intervening do not give enough relevance to social and education factors (Researcher/Head of ICT4D at CIUEM, personal communication, Maputo, February 2014).

1.4. Wrapping-up this chapter

This chapter introduced this work in the broader literature of ICT4D, and identified both the need for context-focused, bottom-up approaches, and for validating theoretical and methodological frameworks in the field. Social Representations Theory responds to this need. This research aims to propose and validate the theory as a suitable theoretical framework which not only considers the local context, but compares it to the views and goals of initiating agencies in charge of ICT4D programmes, in the effort of aligning and making them learn from one another. The next chapter will discuss the theory more in detail, while chapter 3 will present the methodologies adopted for the research.

A second goal of the chapter was to present a brief overview of the extensive existing literature about telecentres, to which this work aims to contribute. This research investigates a context (Mozambique), which is rather unexplored, and where the ICTs' sector development,

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which is also a sector of ICTs *for* development, is very dynamic and attracts huge financial investments.

2. The Theory of Social Representations: a suitable framework for the domain of ICTs for Development?

2.1. Aim and rationale of the literature review

This chapter will introduce the Theory of Social Representations (SRT), which has guided the research presented in this work. After explaining its main distinctive characteristics and the leitmotivs around its theoretical debate, the chapter will show how SRT has been applied to the domain of interest of this study, Information and Communication Technologies for Development (ICT4D), and to its adjacent domains of Information and Communication Technologies (ICTs) and International Development.

The aim of this chapter is to explore and critically review the literature scholars have been producing around the considered domains. Specifically, I want to understand and reflect on how SRT was applied to studies similar to the one at hand, which *methods* of data generation and data analysis were considered, which *aims* guided scholars' studies, and which *results* were identified thanks to the contribution of the theory.

A further aim of this literature review is to *identify gaps* and *ways forward* for the use of the SRT. In particular, I wanted to understand whether SRT could be a suitable and informative theory within the field of ICT4D, where it is quite unexplored.

A caveat: this chapter will investigate how scholars have applied SRT to the domains of interest of this study, while the way this work enters the discourse of telecentres has already been addressed in chapter 1. Further considerations about the methodological approach adopted along the study and how it enters the literature of the considered domains will be treated in chapter 3.

2.2. Epistemology and characteristics of a "theory of change"

The Theory of Social Representations pertains to the discipline of social psychology. First introduced in France by Serge Moscovici (1961), SRT is a framework used to study psycho-social phenomena in contemporary societies (Wagner et al., 1999).

Moscovici defines social representations (SR) as "systems of values, ideas and practices" (1961, pp. IX) that are shared in a social group and have a two-fold purpose. First, they are a way for social actors to interpret their world, orientate themselves, and make sense

out of their reality. Second, they enable individuals to communicate with each other and within their communities. Social representations, in fact, provide individual with codes "for naming and classifying unambiguously the various aspects of their world and their individual and group history" (Moscovici, 1961, pp. IX–XIV). The relationship between social representations and communication has been made evident since the first definition and will not cease to be addressed as one of the defining characteristics of the theory.

> *Communication not only transmits, but also shapes representations*
> *and makes them socially shared. (Laszlo, 1997, p.156)*

Moscovici's theory moves from a revision of Durkheim's (Durkheim, 1898) notion of "collective representations". According to the French sociologist, the mind of the individual is "a microcosm of the collective conscience of the society, reflecting forms and contents of the social world" (Parker, 1987, p. 452). With the term "social" replacing "collective", Moscovici wants to account for the more diverse and fragmented forms that representations take in modern contemporary societies, where they appear to be more dynamic and multifaceted. Different from Durkheim's collective representations, which are usually attributed to more traditional societies, social representations cannot just be assimilated with ideologies, science, and views of the world. They are systems of shared meanings that allow individuals and social groups to perceive their world and communicate among each other.

Social representations are "indispensable features of social life *in all cultures*" (Voelklein & Howarth, 2005, p. 9), "embedded in historical, cultural and macro social conditions" (Wagner et al., 1999, p. 25). They are generated through processes that tend to link new and unfamiliar phenomena to familiar, stable, and shared categories of concepts and images. This allows individuals to interpret and label them, to speak about them and communicate with each other (Moscovici, 1984). Familiarisation with the new is processed in two ways: *anchoring* and *objectification* (Moscovici, 1961, 2000). Anchoring is the process by which unfamiliar objects or phenomena are named and categorised and linked to the already existing knowledge. It is a stabilising process, "inner-directed", and relies primarily on individuals' experiences and memory. Objectification is "a sense-making activity in which the individual […] reconstructs the existing content of representations, creates new ones and gives meanings to these new contents" (Markovà, 2000, p. 29). Objectification is an "other-directed" process, where ideas that were formerly perceived are now conceived (Moscovici, 1984).

Moscovici (2000) describes social representations as *a semiotic triangle*, with three vertexes indicating the "ego–alter–object" relationship, as shown in figure 2.1. SRT, therefore, does not functionally separate the subject from the object that is perceived. At the same time, SRT puts the subject in relationship with other subjects (i.e.: the social groups they belong to).
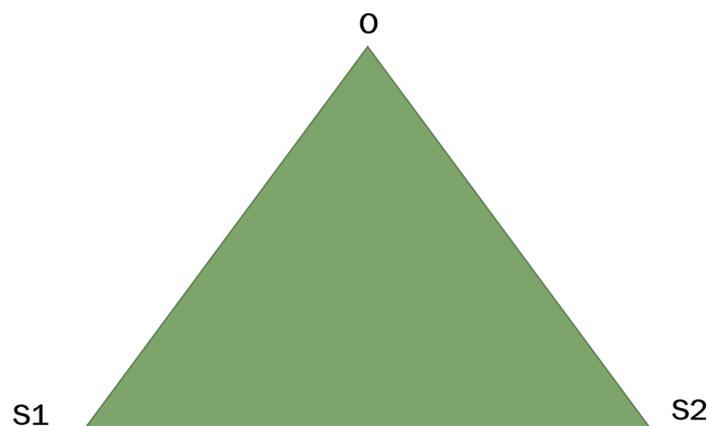
Figure 2.1: The semiotic triangle of social representations, showing the relationship ego (S1) – alter (S2) – object (O).

Rather than being cognitive products of individuals' minds and different from other widespread socio-psychological approaches, social representations *are a product of social interaction and negotiation* of an individual and their social group (Billig, 1996; Byford, 2002). This characteristic of SRs shows their deep connection with the linguistic thought, which argues that languages contribute to both voicing and shaping ideas, that different languages allow for different reality meaning-making, and that speakers can communicate with each other thanks to "an agreement that holds throughout our speech community, and is codified in the patterns of our language" (Whorf, 1940, p. 235). The relationship with the other is essential for social representations to be formed:

> *Meaning is not an individual or private affair, but always implies the "other", concrete or imagined. (Bauer & Gaskell, 1999, p. 170)*

Just as languages and communication are (Cantoni & di Blas, 2006), social representations are both individual and social. As Voelklein and Howarth (2005) state, social

representations are not a given where the subject has no active role. Social actors' negotiation of meanings gives space for *individual agency* to come into play:

> *A representation is not a mere reflection or reproduction of some external reality. There is symbolic space in the development and negotiation of representations, which is why all human beings hold creative power and agency in their formation and use. (Voelklein and Howarth, 2005, p. 4)*

Thus, SRs are not to be confused with individual cognitive representations nor they should considered as stable and invariable (Farr, 1994). Competing and contradictory SRs can coexist even within the same social groups, communities, and cultures. Moscovici translated the multi-layered facets of social representations with the concept of *cognitive polyphasia* (Moscovici, 1961), according to which, different, and sometimes incompatible, cognitions and knowledge can coexist within a group or even within the same individual (Voelklein & Howarth, 2005).

Social representations, then, have different phases, and can evolve in time. Maury (2007) discusses the existence of three phases in which social representations are formed, from a diachronic perspective:

> 1. *Emergence: precedes the appearance of stable, consensual knowledge directly related to the object. This phase is characterised by considerable variability of opinions which are, moreover, only weakly structured.*
> 2. *Stability: presence of consensual elements that are strongly linked to each other.*
> 3. *Transformation: old consensual elements coexist with new, sometimes contradictory elements. (Maury, 2007, p. 9)*

Bauer and Gaskell (1999) extend the semiotic triad proposed by Moscovici to include the *dimension of time*. They argue that, even if individually cognised, social representations always implicate the presence of the other in their past social experience. In time, the meaning of the represented social object emerges socially. Their proposed basic unit of analysis is finally depicted as a *toblerone* (Figure 2.2):

> *The elongated triangle serves as an image to capture the triangular relations in the context of time. The apexes of the triangle stand for subject 1, subject 2 and the object O in the sense of a brute fact, the referent. The elongation is the past and the future that is implied in the joint project P. A section though the toblerone at any particular time is a surface that denotes the common sense meaning [the*

representation] of that object at that time. (Bauer and Gaskell, 1999, p.171)
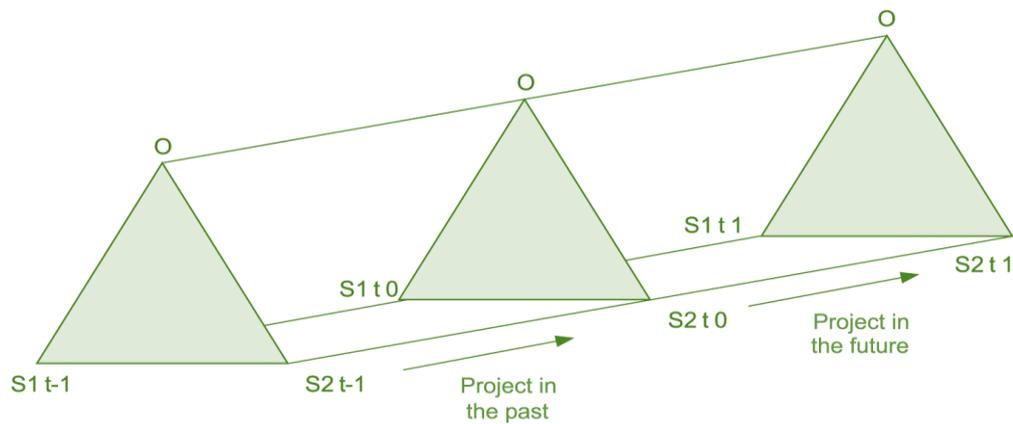
Figure 2.2: Bauer and Gaskell's "Toblerone Model of common sense" (1999, p.171).

According to Voelklein & Howarth (2005), there must be a certain degree of consensus on social representations, based upon common language, tradition, and rituals. Without a consensus, cognition and communication cannot take place. However, social interaction is argumentative in nature and characterised by fragmentation and contradiction. Markovà (2003) proposes a *dialogical epistemology* for social representations, positioning the theory as a theory of change. Social representations, similar to culture, language, and cognition, are dynamic phenomena that exist only in relation to something else and cannot be captured entirely. The dialogical epistemology of social representations is put in contrast with empirical and mechanistic epistemologies that have traditionally defined objects as static, "in terms of dualism between the knower and the object of knowledge" (Markovà, 2000, p. 12). Social representations are, instead, phenomena in the making and in social change, more in line with constructivist approaches which involve the reconstruction of socially-shared knowledge. Thus, the difficulty to grasp and conceptualise SRs. A social representation:

> *...lives through the activities, tensions and conflicts of groups and individuals, who actively appropriate, innovate and create new phenomena. On the basis of this epistemology it develops original dialogical (dialectic) concepts like themata, communicative genres, objectification as appropriation and creation of meaning, which in turn are relevant to the study of phenomena in social change. (Markovà, 2000, p. 36)*

The concept of social representations as a theory of change is evident in the distinction between *reified* and *consensual* universes of meanings SR refer to. According to this notion, different social groups have different degrees of access to diverse knowledge and to more influential positions in the society. They have a different *power* to present particular claims to what official representations of social phenomena should be. In Howarth's words:

> *Those who win the battle over meaning and so the social construction of reality (for the moment – as meaning are constantly re-negotiated) are those whose versions of reality are, or come to be, reified and legitimized as what is socially accepted as "reality". The reified universe of Western science, for example, is generally accepted to be closer to any objectively definable "truth" than myth or "primitive thought" [...]. Hence between the "reified" world of science and the "consensual" world of common sense there is conflict and argumentation. (Howarth, 2006, p. 19)*

The conflict between a reified (institutional, scientific) and a consensual (common sense, non-institutional) universe of meanings refers to the ways in which knowledge is "received and absorbed into a culture, generating new social representations" (Batel & Castro, 2009, p. 416).

Social representations appear to be not only a product of social groups' meaning-making, but a prescriptive and coercive set of ideas that limit social groups' actions and thinking, especially when they are already stabilised, thus harder to change. Still, established SRs can be challenged:

> *A representation is not simply a repetition or replication of some idea presented by a dominant social group; it involves the deliberate action of those involved [...] In the process of "taking on" social representations, there is always the possibility of re-negotiation and so transformation and change. (Voelklein & Howarth, 2005, pp. 12-13)*

This characteristic dialectic between agency and structure, tradition and change of social representations is one of the main sources of criticism to the theory, and at the same time one of its major advantages (Voelklein & Howarth, 2005).

2.3. Rationale for employing Social Representations Theory

SRT is rooted into different traditions, such as Piaget's social constructivism (Piaget, 1945), Saussure's linguistics (Saussure, 1916), and cultural psychology (Bruner, 1991). Its

distinctive characteristics set SRT apart both from the constructivist approaches that do not recognize the importance of a triangular relationship among subject, social groups, and object of knowledge and from the mainstream social psychology theories, usually approached through phenomenological and experimental research (Laszlo, 1997). This section intends to show the reasons behind the choice of employing SRT in the field of ICT4D.

As already mentioned, the *dialectic* between social representations' agency and structure on the one hand, and tradition and change on the other, is one of the main sources of criticism to the theory (Voelklein & Howarth, 2005). At the same time, it is one of the distinctive features that makes SRT attractive for this study. According to Jovchelovitch (2007), social representations originate when communities are pushed to cope with novelties, through the basic processes of anchoring and objectification, as seen in section 2.2. Once social representations are established, even if still negotiated, they provide community members with shared systems of knowledge and enable them to communicate and develop specific attitudes towards phenomena (Wagner & Hayes, 2005).

The study of social representations is particularly beneficial, then, when socio-cultural phenomena are (relatively) new for specific communities. As the study by Bauer and Gaskell (1999) points out, the application of SRT has implications in the design and conduct of empirical research. "Ideal" research on social representations should be performed within natural groups (communities), during time of social change, and through longitudinal studies that analyse behaviour, cognition, and communication acts (Bauer & Gaskell, 1999). ICT4D studies can perfectly fit with this "ideal" type of research. ICTs entered Mozambican communities abruptly: they were not developed in that context, they were a novelty local communities had to appropriate. CMCs are a model that was developed within the framework of an intergovernmental organisation and deployed in several countries of three different continents (Creech, 2006; UNESCO, 2004). Again, this model was conceived in another reality and then applied to the Mozambican context with a top-down approach (see chapter 1).

Equally relevant for this study is the way the emergence and evolution of social representations are contingent on 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 fact that they draw deeply on contextual specificities respond to the repeatedly claimed need for a deeper understanding of the often neglected socio-cultural dynamics underlying ICT4D initiatives (Brunello, 2010; Kleine & Unwin, 2009; Tedre, Sutinen, Kähkönen, & Kommers, 2006; Unwin, 2009). Frequently, a mismatch between ICT interventions and local realities, the so called "design-reality gap", is ascribed as one of the major reasons why they fail or do not reach expected results (Heeks, 2002; 2003). Only a deep understanding of the specific and contextual ways in which ICTs are appropriated and have an influence in 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).

The constructionist and non-experimental nature of SRT is considered suitable, in this work, to grasp the subjacent cultural layers under top-down ICT interventions, which might be alien to communities' social context. Additionally, by considering and comparing different social groups' conceptualisations, the theory allows to identify potential *misalignments* among different stakeholders' perspectives on those projects and to recognise underlying reasons for the observed differences (Gal & Berente, 2008). The theory, then, is not only a potential means to bring the local voices into the design and planning of top-down conceived ICT4D programmes and projects, thus re-balancing their approach with the values and point of view of the grassroots level; SRT is also an approach by which the priorities of initiating and funding agencies are also taken into consideration. While misalignments in social representations of ICT4D projects may lead to social sustainability issues (Rega, 2010b), sustainability can be reached only by actions meant to re-align conceptualisations towards the directions of both the local people and the initiating agencies.

At a theoretical and epistemological level, the SRT is well suited for ICT studies in *communities* (Gurstein, 2007), because of the way it looks at dynamics of power, inter-individual interaction, communication, and communities' engagement in the making of social reality (Sarrica, 2011). As Sarrica points out:

> *Doing research is not conceived as a detached measurement of subjects, but rather as a shared process of confrontation with participants and communities, often involving a pragmatic goal of positive transformation and development of communities. (Sarrica, 2011, p. 8)*

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The triadic relationship ego-alter-object implies no separation between individual perceptions and the socio-cultural context (other social actors), who are always called as co-constructors and co-responsible for generating shared meanings. The focus is not, as in other constructivist psychological approaches, on the internal decision-making of individuals, rather on the relationship with the other and with the context (Wagner et al., 1999).

2.4. Criteria for the inclusion in the literature review

The following review of the literature enters the dialogue of applied studies about social representations. Three domains of application of SRT were considered, on virtue of their relevance for the focus of this study. First, SRT as applied to the field of ICT4D, the field in which the research for this work developed. Yet, the use of SRT within ICT4D studies and interventions has not found its distinct position, and only a handful of studies were found concerning the topic. The review of the literature, then, was extended to include other two adjacent domains: ICTs, and International Development. Figure 2.3 shows how the three areas of application of SRT considered in this literature review intersect and juxtapose.
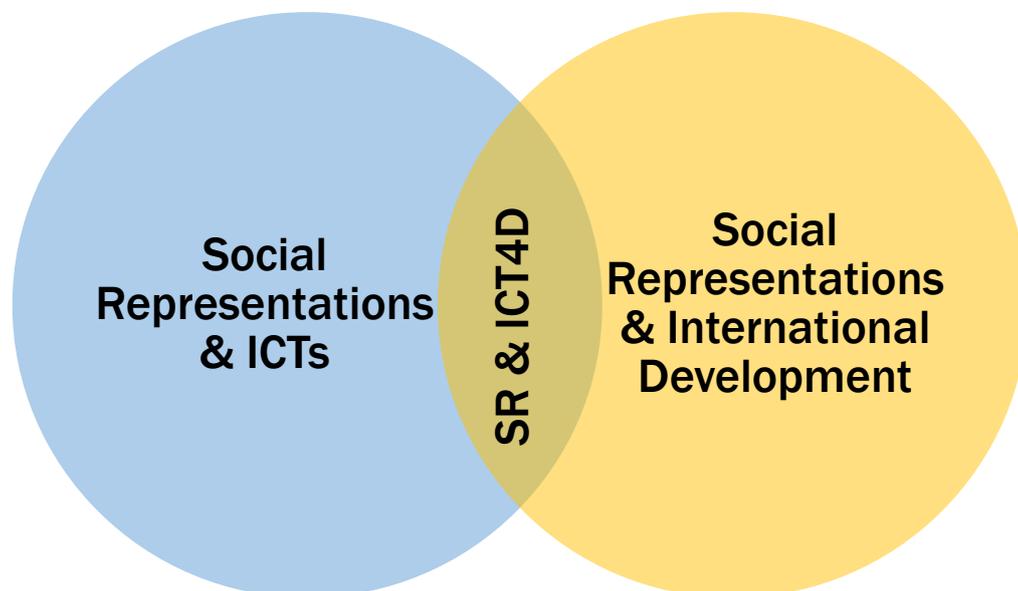
Figure 2.3: The three areas of application of SRT considered in this literature review.

While studies of SR applied to research on ICTs and to the area of ICT4D have clearly defined boundaries, the criteria that guided the inclusion of SR studies applied to the

domain of development requires further clarification. In this review of the literature, *development* is defined as *international development*, in which development actions are linked to international cooperation, development agencies, and the fulfilment of the Millennium Development Goals (Sumner & Tribe, 2008). Development here does not include, then, the growth that a country or community would experience without international participation. Studies applying SRT to development initiatives and to reflections on development itself in developing countries and BRICS were included in this study.

Studies applying the theory of SRs considering development as an internal national issue were not included, even when set in developing countries or BRICS. Likewise, studies considering development issues in non-developing countries (e.g., healthcare or education in Europe, agriculture in North America, etc.) were excluded. Discourses considering cultural identities and how they are formed, racism and stigma, as well as religious and political identities were also excluded, unless these themes were treated as part of cooperation projects. Human rights, peace-making, and conflicts-related studies were also not considered as development issues, as they were associated as concerning cultural identities or emergency issues rather than development situations.

On the other hand, studies applying the SRT to the domain of ICTs do include also works conducted in non-developing countries. Finally, studies of SRT in the domain of ICT4D include mostly studies conducted in developing countries, but for one article presenting a study including refugee women in the UK: the themes discussed in this study are so akin to the ones in ICT4D that I decided to include it. In this research, TV, its representation, and uses were not considered as part of ICTs, unless it was used in school as an instrument to improve teaching and learning practices.

2.4.1. Documents retrieval method

In this review of the literature, journal articles, conference proceedings papers, and theses (at a Doctoral, Master, and Bachelor level) published up to September 2013 were included. Search on the literature was performed in five (5) languages: English, French, Portuguese, Spanish, and Italian, the ones in which most of the literature on Social Representations was expected to exist: while France saw the birth of the theory and has a long tradition regarding its theoretical speculation, Latin America participated in a significant evolution and diffusion of SRT, particularly in Brazil (Laszlo, 1997), and some authors agree

on the fact that "this development has not been without practical implications outside academia" (Bertoldo, Bousfield, Justo, & Wachelke, 2011, p. 1). According to Bertoldo et al., this extraordinary Hispanic and Lusophone dissemination is due to the publication, in 1993, of a chapter about Social Representations in the Portuguese handbook of social psychology "Psicologia Social" by Jorge Vala (1993). Studies in Italian were included as Italy has a strong tradition in studies of Social Representations, carried on in particular within the University of Padova, with Professor Alberta Contarello, the University of Udine, with Professor Leopoldina Fortunati, and the Università La Sapienza of Rome, with Doctor Mauro Sarrica and Professor Annamaria De Rosa. Professor De Rosa is internationally known for having founded and for managing the European PhD in Social Representations and Communication (www.europhd.eu). Finally, the literature in English was explored. Yet, SRT in the Anglophone world took some time to gain its place, and for a long time it was looked at with suspicion, especially within the American schools of experimental psychologists and the British discursive psychologists. Only recently, the theory was considered also by Anglophone scholars (Voelklein & Howarth, 2005).

With the aim to include all published studies that respond to the characteristics listed in above, articles, papers, and theses were searched in three different ways:

1. By searching within the most relevant journals and conferences of the considered fields: ICT4D, Social Representations, and Development studies.
2. By performing an extensive and multi-lingual search on recognised databases listing scholar works.
3. By following referenced works from the retrieved documents.

Regarding the first criterion, documents that deal with the theory of Social Representations applied to the domain of *ICT4D* were searched among the most widely recognised journals and conferences in the ICT4D field, by using the keyword "Social Representations". The seven journals standing as reference points in the field, as indicated by Richard Heeks (2010) and Ricardo Gómez (2013) are: Information Technologies and International Development (ITID), Information Technology for Development (ITD), the Electronic Journal of Information Systems in Developing Countries (EJISDC), the Journal of Community Informatics (JoCi), the International Journal of Education and Development Using Information and Communication Technology (IJEDICT), the International Journal of Information Communication Technologies and Human Development (IJICTHD), and the

International Journal of Technology Diffusion (IJTD). Proceedings from the four major conferences in the field (Gómez, 2013) were also included in the search: Information and Communication Technologies for Development (ICTD), Working Group 9.4 of the International Federation of Information Processing (IFIP 9.4), International Development Informatics Association (IDIA), and Community Informatics Research Network (CIRN). All these journals and conferences publish in English, therefore keywords were searched only in this language.

Two journals dedicated to research on *Social Representations* were also searched, with the aim to look for studies applied to the domain of ICTs or development (or both): Papers on Social Representations, published in English, French, and Spanish; and Cultura y Representaciones Sociales (Culture and Social Representations), published in Spanish. Also, five journals publishing more general studies in the field of social psychology were considered: Connexions (in French), the Journal for Theory of Social Behaviour (English), Bulletin de Psychologie (The Psychology Bulletin, in French), Revista Psicologia e Saber Social (Journal of Psychology and Social Knowledge, in Portuguese and Spanish), and the Journal of Community & Applied Social Psychology (English). The two major conferences in the field of Social Representations were also considered: International Days in Social Representations (Jornadas Internacionais em Representações Sociais - JIRS) and the International Conference on Social Representations (Conferência Internacional de Representações Sociais - CIRS), including works in English, French, Portuguese, and Spanish. Finally, the Brasilian Scientific Electronic Library Online (SCIELO Proceedings), including works in English, Portuguese, and Spanish, and the documents published in the International Centre for Representations and Social Psychology Investigations "Serge Moscovici" (Centro internacional de pesquisa em representações e psicologia social "Serge Moscovici") were considered. Keywords used, in this case, were "ICTs", "development", or "developing countries" and their respective translations.

Finally, journals in the field of *Development* were searched, in order to look for studies that applied the theory to the field of development. The first ten (10) journals about development in the list proposed by Heeks (2010) were selected (journals specifically on ICT4D were not considered as they were included in the previous domain): World Development, the Journal of Development Studies, Oxford Development Studies (ODS), Development Policy Review, Studies in Comparative International Development (SCID),

Sustainable Development, European Journal of Development Research (EJDR), Development and Change, the Journal of International Development, and Development. The keywords used were "Social Representations + ICTs". All journals were in English.

Regarding the second criterion, an extensive multi-lingual search was performed on *scholarly databases* with the keywords: "social representations + ICT4D", "social representations + ICTs", and "social representations + development" or "social representations + developing countries". All keywords were searched in the five languages. The databases consulted were Science Direct, JSTOR, Google Scholar, and SwissBib, the Swiss catalogue listing the publications available in the libraries of all Swiss universities, universities for applied science, federal research stations, and the Swiss national library.

A *caveat*: studies talking about representations that nevertheless were not explicitly mentioning SRT were not included in this review of the literature, as they were not considered to apply the theory. Also, conference proceedings papers dealing with social representations in terms of the project RE-ACT were not included in this literature review as they were considered to present partial results of this thesis and to inform the articles composing this work. Finally, Van Zyl's doctoral dissertation, starting off an ICT4D project in South Africa and discussing about symbolic narratives associated to technological encounters (Van Zyl, 2013), was not included. Even if Van Zyl's work discusses extensively about social meanings, in fact, it distances from Moscovici's theory by searching a "more integrated sense […] especially in relation to other socio-cultural factors" (ibid., p. 155).

Table 2.1 summarises the method used to retrieve the corpus of documents included in this literature review and the languages used in each case. Table 2.3 presents the list of the retrieved documents that form part of the corpus analysed in this chapter. Published papers and articles on the topic written within the project RE-ACT (see Chapter 4) and Van Zyl's PhD thesis (Van Zyl, 2013) are listed at the end of table 2.3, marked with a star. The three articles presented as results of this work (chapter 4) are *not* listed in the table.

2.4.2. Analysis of the resulting corpus

The search produced a set of 50 documents, divided into three corpora:

1. Studies on Social Representations and ICT4D (SR & ICT4D);
2. Studies on Social Representations and ICTs (SR & ICTs); and
3. Studies on Social Representations and International Development (SR & Dev).

The three corpora were analysed separately, according to four criteria:

1. A descriptive analysis on 4 factual characteristics of the documents: their date of publication, the type of publication, the language in which they were written, the world region in which the study was produced and applied;

2. A thematic analysis on topics tackled within the studies;

3. An analysis of the methods of data generation and data analysis they apply; and

4. A reflection on the outcomes obtained through the application of the social representations approach.

Results of this review of the literature are presented in the next section (2.5), divided into the three main corpora identified.

Table 2.1: Journals and Databases searched. Searches were performed in English, French, Portuguese, Spanish, and Italian.

	Keywords					
	SR & ICT4D	SR & ICTs	SR & "developing countries"	SR	ICTs	Development
ICT4D						
Journals: ITID, ITD, EJISDC, JoCi, IJEDICT, IJICTHD, IJTD.	-	-	-	EN	-	-
Conferences: ICTD, IFIP 9.4, IDIA, CIRN.	-	-	-	EN	-	-
Social Psychology						
Journals: Papers on Social Representations, Cultura y Representaciones Sociales, Connexions, Journal for Theory of Social Behaviour, Bulletin de Psychologie, Revista Psicologia e Saber Social, Journal of Community & Applied Social Psychology.	-	-	-	-	EN, FR, PT, ES, IT	EN, FR, PT, ES, IT
Conferences: JIRS, CIRS.	-	-	-	-	EN, FR, PT, ES, IT	EN, FR, PT, ES, IT
International Development						
Journals: World Development, Journal of Development Studies, ODS, SCID, Sustainable Development, EJDR, Development and Change, Journal of International Development, Development.	-	EN	-	-	-	-
Scholarly Databases						
Science Direct, JSTOR, Google Scholar, SwissBib.	EN, FR, PT, ES, IT	EN, FR, PT, ES, IT	EN, FR, PT, ES, IT	-	-	-
SCIELO	EN, PT, ES	EN, PT, ES	EN, PT, ES	-	-	-

Languages in the table are abbreviated, with EN standing for English, FR for French, PT for Portuguese, ES for Spanish, and IT for Italian.

2.5. Results of the analysis on the literature

A total of 50 documents were retrieved from searching the literature, and constitute the total corpus of studies analysed in this literature review. Of these, six belong to the field of ICT4D, eight to international development (from now on referred to as "Dev"), and 36 to the field of ICTs. Regarding document typologies, 31 are articles published in journals, eight are proceedings of international conferences, eight are dissertations (including two PhD theses, four Master's, and two Bachelor's), and three are book chapters. The complete list of documents considered in this review is listed in table 2.3.

All the documents found are part of studies conducted recently: the oldest one is from 2002 and tackles with issue of the use of ICTs in educational settings in Brazil (Madeira, Tura, & Ferreira, 2002), and the newest one is from 2013. The trend of studies' production along the years shows that scholars have adopted not only sporadically the frame of SRT in studies dealing with ICTs and development. Rather, and in view of the fact that documents published after September 2013 might have been excluded from this study, it seems that the SR approach is gradually gaining its place within the applied domains of ICTs and Development. Besides, even if at the moment it is considered by a niche of scholars, the framework is most likely to be proving its suitability for the considered domain. Figure 2.4 presents the total number of articles retrieved for this review by year of publication, while figure 2.5 divides them also by domains.
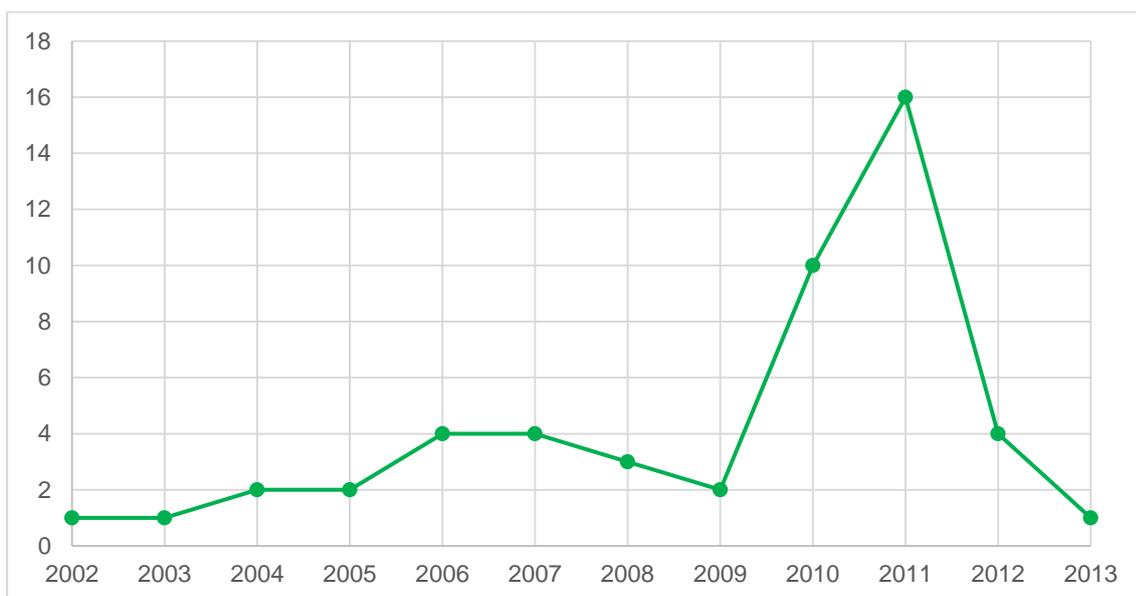
Figure 2.4: Complete corpus of documents retrieved by year of publication.
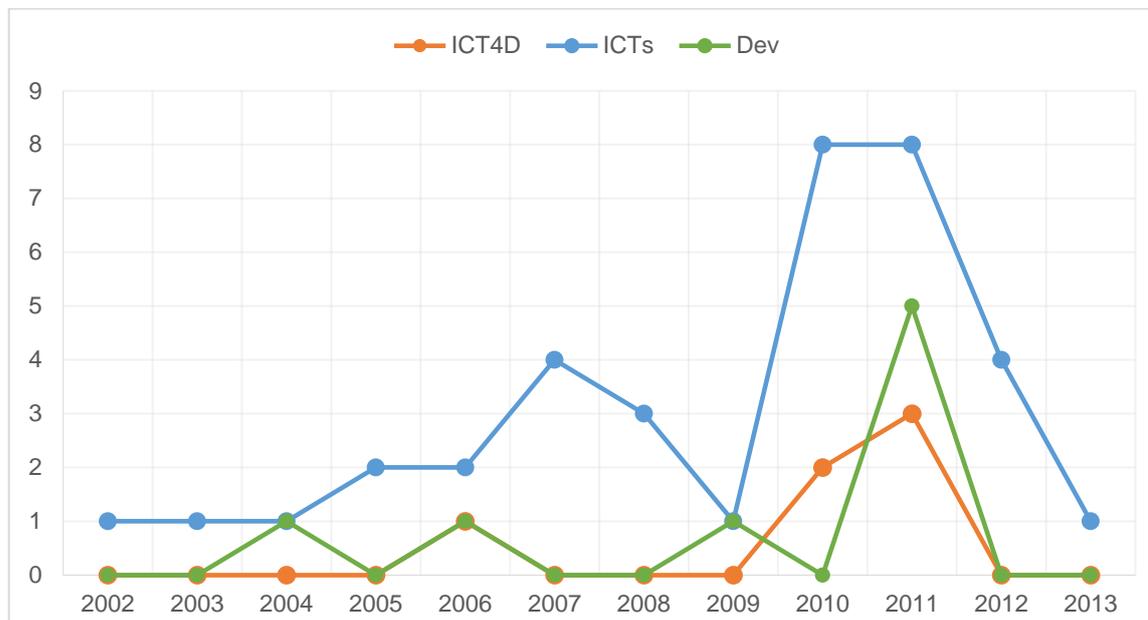
Figure 2.5: Number of documents retrieved by domain and year of publication.

Of the 50 documents included in the corpus, the majority (26) are in English, followed by 19 in Portuguese and five in Spanish. The search in Italian and French did not produce any results. As for Italy-based studies, it might be the case that researchers dealing with SR are publishing in English (this is the case of Contarello, Fortunati, & Sarrica, 2007; de Rosa, 2006; Fortunati & Manganelli, 2008; Sarrica, 2011). French-speaking scholars, on the other hand, might be more theoretically oriented, or might have never considered these fields of applications for the theory.

Studies were also divided according to the world regions where the Institutions they were produced are based. Twenty-four (24) out of 50 studies (almost one in two) were produced in Latin America and the Caribbean, in particular in Brazil, which confirms that the region is one of the major adopters of the theory when it comes to use it in applied fields. Europe also confirms to be one of the main hubs for the development and adoption of SRT, with 20 documents out of 50 (40.0%), with Italy playing the major role. These data show that the study of SR in the region is not limited to its theoretical speculation, but is also looking towards practical implications of the theory. Finally, seven studies were produced in North America and one in Africa. No research was found that was produced in Asia-Pacific or the Middle East.

Studies published in English were produced in all the four regions of productions. While in North America and Africa only English was used as language of dissemination, in Europe and Latin America studies in Spanish and Portuguese were found too.

Regarding the regions used as fields of application for the studies at stake, again there is a clear predominance of Latin America and the Caribbean region (24 studies were carried on here). Studies conducted in Europe (15 studies) and North America (two studies) lose some points in favour of Africa as a field of work (nine studies), showing that researchers in these two regions use this theoretical approach to apply it somewhere else, especially in developing countries. Finally, one study applies to global themes and no specific region.

Figure 2.6 and 2.7 present the distribution per region of production and of application of the studies at stake. It is to be considered that regional categories were not applied on a mutual exclusivity criterion, as there could have been the case of studies produced by several researchers affiliated to different institutions based in different world regions, or of studies carried out in multiple regions.
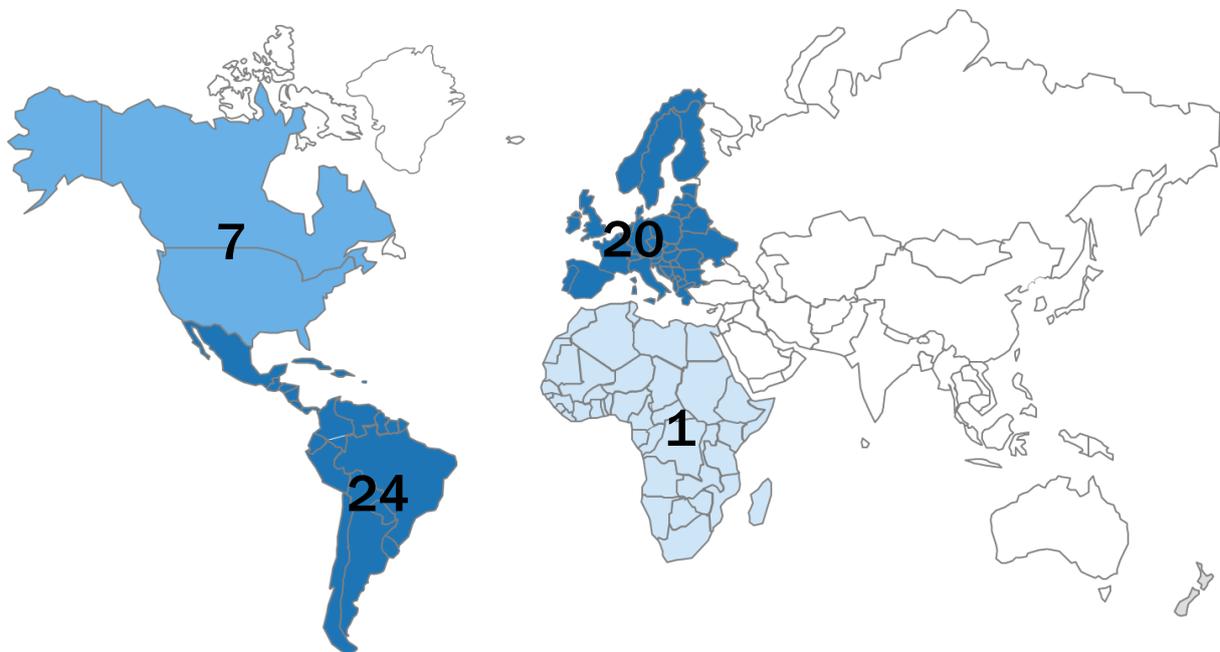
Figure 2.6: Map showing the world regions where the studies included in this literature review were produced. The numbers indicate the numbers of documents retrieved and included in this literature review.
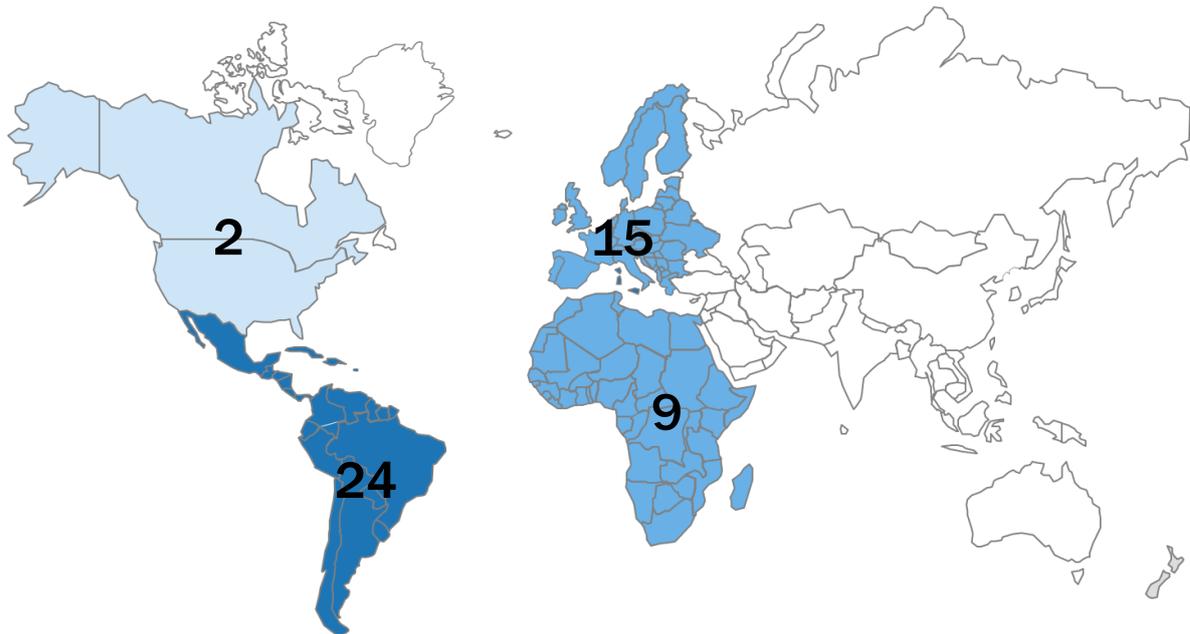
Figure 2.7: Map showing the world regions where the studies included in this literature review were applied. The numbers indicate the numbers of documents retrieved and included in this literature review.

As regards to universities and institutions, 31 out of 42 institutions participating in the studies contributed to only one publication. Eleven (11) institutions, consequently, have more than one study published in the field. In particular, Italian universities seem prolific in the study of SRs and ICTs: University of Padova has six publications, while University of Rome La Sapienza and University of Udine have four each. Università della Svizzera italiana (Lugano, Switzerland), has three studies published about SRs and ICT4D. Six (6) out of the remaining seven institutions are based in Brazil, and one in the USA (Emory University, Atlanta, USA; Federal Institute of Education, Science and Technology of Rio de Janeiro, Brazil; Federal University of Pernambuco, Brazil; Federal University of Rio Grande do Sul, Brazil; Public Network of the State of Rio de Janeiro, Brazil; University of Brasilia, Brazil; University Salgado de Oliveira-UNIVERSO, Brazil). They have two publications each in the field of ICTs but the Federal Institute of Education, Science and Technology of Rio de Janeiro, the University Salgado de Oliveira-UNIVERSO, and the Public Network of the State of Rio de Janeiro that also have one in the field of ICT4D. Their main interest seems to in the use of ICTs for educational purposes.

Regarding the authors of these studies, only seven out of 75 scholars have more than one publication on the topic. The most prolific authors are Mauro Sarrica (University of

Padova and University of Rome La Sapienza) and Alcina Maria Testa Braz da Silva (from different affiliations: Federal Institute of Education, Science and Technology of Rio de Janeiro, Brazil; Federal University of Rio de Janeiro, Brazil; University Salgado de Oliveira-UNIVERSO, Brazil; Catholic University Santa María de los Buenos Aires, Argentina; and National Scientific and Technical Research Council, Buenos Aires, Argentina), who both published five studies on SR & ICTs each. Alberta Contarello (University of Padova) and Leopoldina Fortunati (University of Udine) have four each, also publishing about SR & ICTs. Isabella Rega (Università della Svizzera italiana, Lugano, Switzerland) has three, and considers the topic of SR & ICT4D. Oby Obyerodhyambo and Kate Winskell (both from Emory University, of Atlanta, USA) have two each, and explore the field of SR & international development.

The following sections will explain in detail the outcome of the literature review for each of the three areas of application investigated (ICTs, Dev, and ICT4D). The majority of documents that were retrieved (36) belong to the area of ICTs and investigate how their diffusion changed conceptualizations, practices, and values that different social actors confer to them. The clusters of studies about Dev and ICT4D are composed by eight and six documents respectively.

Table 2.2 summarises the number of documents retrieved, divided by domain, language, publication typology, and regions where they were produced and applied. Table 2.3 shows the complete list of documents that compose the corpus analysed for this review of the literature. Documents are presented with their complete reference, their typology, their language, the domain they were included in, and the main thematic areas they deal with.

Table 2.2: The 50 studies retrieved, divided by domain, language, publication typology, and regions of production and of application.

Total corpus of studies		
		#
Domain	ICTs	36
	International Development	8
	ICT4D	6
Language	EN	26
	PT	19
	ES	5
Publication typology	Journal	31
	Conf. Proceedings	8
	Thesis (Master)	4
	Book chapter	3
	Thesis (PhD)	2
	Thesis (Bachelor)	2
Region of Production*	Latin America & Caribbean	24
	Europe	20
	North America	7
	Africa	1
Region of Application*	Latin America	24
	Europe	15
	Africa	9
	North America	2
	all	1

*The categories "Region of production" and "Region of application" allow for a document to be assigned to more than one sub-category.

Reference	Domain	Areas	Type	Lang.
Bailey, A., & Ngwenyama, O. (2011). The challenge of e-participation in the digital city: Exploring generational influences among community telecentre users. Telematics and Informatics, 28(3), 204–214.	ICT4D	Access to ICTs, eParticipation, eGovernment	Journal	EN
Rega, I. (2010a). Detecting the Unexpected: Investigating Social Representations of Telecentres. In Tales of the Unexpected: Vision and Reality in Community Informatics. (pp. 1–12). Prato, Italy.	ICT4D	Access to ICTs	Conference Proceedings	EN
Rega, I. (2010b). What do local people think about telecentres? A key issue for sustainability (Doctoral dissertation). Università della Svizzera italiana - USI, Lugano, Switzerland.	ICT4D	Access to ICTs, appropriation & meaning making, eGovernment	Thesis (PhD)	EN
Rega, I., & Van Zyl, I. (2011). ICT attitudes in educational practice: a qualitative perspective. In Rethinking Education in the Knowledge Society. (pp. 1–19). Monte Verità, Ascona, Switzerland.	ICT4D	ICT4E	Conference Proceedings	EN
Siddiquee, A., & Kagan, C. (2006). The internet, empowerment, and identity: an exploration of participation by refugee women in a Community Internet Project (CIP) in the United Kingdom (UK). Journal of Community & Applied Social Psychology, 16(3), 189–206.	ICT4D	Gender, Identity preservation, eParticipation	Journal	EN
Silva, A. M. T. B. da, Constantino, G. D., & Premaor, V. B. (2011). A contribuição da teoria das representações sociais para análise de um fórum de discussão virtual. Temas em Psicologia, 19(1), 233–242.	ICT4D	ICT4E	Journal	PT
Abdalla, M. de F. B., & Rocha, A. G. (2010). Representações Sociais sobre Novas Tecnologias da Informação e da Comunicação e o Contexto Escolar. Educação, Formação & Tecnologias, 3(2), 61–70.	ICTs	Education	Journal	PT
Andrade, J. A. de, Muniz, I. S. de A., & Silva, C. Â. da. (2010). Inovação e Representações Sociais de Dirigentes das Empresas de um Polo Tecnológico. Contextus - Revista Contemporânea de Economia e Gestão, 8(2), 73 – 80.	ICTs	Innovation, work environment	Journal	PT
Araujo, D. B. de. (2010). Representaçoes Sociais de Genero na TV Escola: uma analise feminista (Master). Universidade Federal da Bahia, Bahia, Brazil.	ICTs	Education, gender studies	Thesis (Master)	PT
Araújo, S. S. S. de. (2011). Cultura informacional, representações sociais e Educação a Distância: um estudo de caso da EaD na UFMG (Master). Universidade Federal de Minas Gerais, Brazil.	ICTs	Education, distance learning	Thesis (Master)	PT
Bacallao Pino, L. M. (2010). Representaciones mediáticas de las redes sociales: un estudio de casos. Revista Latina de Comunicación Social, 65, 114–125.	ICTs	Journalism, social media	Journal	ES
Capozza, D., Falvo, R., Robusto, E., & Orlando, A. (2003). Beliefs about the Internet: methods of elicitation and measurement. Papers on Social Representations, 12(1), 1–14.	ICTs	Appropriation & meaning making	Journal	EN

Conceição, S. C., Silva, B. D. da, & Euzebio, M. S. P. (2011). Representações Sociais de Docentes e Alunos sobre Educação a Distância Online: Resistência e/ou Preconceito? (pp. 1256–1275). Presented at the CIEd.	ICTs	Education, distance learning	Conference Proceedings	PT
Contarello, A., & Fortunati, L. (2006). ICTs and the Human Body: A Social Representation Approach. In New Technologies in Global Societies (pp. 51–74). New Jersey: World Scientific.	ICTs	Appropriation & meaning making	Book Chapter	EN
Contarello, A., & Sarrica, M. (2007). ICTs, social thinking and subjective well-being – The internet and its representations in everyday life. Computers in Human Behavior, 23(2), 1016–1032.	ICTs	Appropriation & meaning making, social well-being	Journal	EN
Contarello, A., Fortunati, L., & Sarrica, M. (2007). Social Thinking and the Mobile Phone: a Study of Social Change with the Diffusion of Mobile Phones, Using a Social Representations Framework. Continuum, 21(2), 149–163.	ICTs	Appropriation & meaning making	Journal	EN
Contarello, A., Fortunati, L., Gómez Fernández, P., Mante-Meijer, E. A., Vershinskaya, O., & Volovici, D. (2008). ICTs and the Human Body: An Empirical Study in Five Countries. In E. Loos, L. Haddon, & E. A. Mante-Meijer (Eds.), The Social Dynamics of Information and Communication Technology (Electronic Library., pp. 25–38). Hampshire, England: Ashgate Publishing, Ltd.	ICTs	Appropriation & meaning making	Book Chapter	EN
Cruz, L. M. R. da, & Marinho, S. P. (2012). Internet e escola: práticas e representações de professores de uma escola UCA em Minas Gerais. Anais dos Workshops do Congresso Brasileiro de Informática na Educação, 1(1).	ICTs	Education	Conference Proceedings	PT
De Rosa, A. S. (2006). Social Representation and Communication Thematic Network: a case study for monitoring the development of a scientific community. In I. Mac Labhrainn, C. Mc Donald Legg, D. Schneckenberg, & J. Wildt (Eds.), The Challenge of eCompetence in Academic Staff Development (pp. 49–57). Galway: CELT.	ICTs	Education	Book Chapter	EN
Farias, P. M. C. (2011). As representações sociais e expectativas dos professores do 3o Ciclo e Ensino Secundário face à utilização da Plataforma Moodle (Master). Universidade Aberta de Portugal, Lisbon, Portugal.	ICTs	Education	Thesis (Master)	PT
Fortunati, L., & Manganelli, A. M. (2008). The social representation of telecommunications. Personal Ubiquitous Computing, 12(6), 421–431.	ICTs	Appropriation & meaning making	Journal	EN
Gal, U., & Berente, N. (2008). A social representations perspective on information systems implementation: Rethinking the concept of "frames." Information Technology & People, 21(2), 133–154.	ICTs	Appropriation & meaning making	Journal	EN
Gondim, É. G. da S. (2012). Representações sociais dos docentes do ensino fundamental do Distrito Federal sobre o uso do laptop educacional como ferramenta pedagógica (Bachelor). Universidade de Brasília, Brasília, Brazil.	ICTs	Education	Thesis (Bachelor)	PT
Gutiérrez Vidrio, S. (2010). Los asalariados frente a las nuevas tecnologías: cuestiones metodológicas para el análisis de representaciones sociales. Cultura y Representaciones Sociales, 1(2).	ICTs	Work environment, appropriation & meaning making	Journal	ES

Hakkarainen, P. (2012). "No good for shovelling snow and carrying firewood": Social representations of computers and the internet by elderly Finnish non-users. New Media & Society, 14(7), 1198–1215.	ICTs	Elderly adoption	Journal	EN
López, C. G. (2012). La representación social de las tecnologías de la información y la comunicación entre los maestros de educación básica en México / The social representation of information and communication technologies among teachers of basic education in Mexico. Psicologia e Saber Social, 1(1), 95–102.	ICTs	Education	Journal	ES
Madeira, M., Tura, L. F., & Ferreira, H. (2002). Informática educativa para professores do ensino fundamental: desvelando sentidos sociais. Revista de Ciências Humanas, 0(5), 323–332.	ICTs	Education	Journal	PT
Maraujo, L. E. L., & Maraujo, M. P. (2009). As representações sobre as tics, na perspectiva da profissionalização sustentável docente de professors/as. Contexto/ITABORAI, 9(15), 45–65.	ICTs	Education	Journal	PT
Moreira, A. do N. (2011). Educação a Distância no campo das Representações Sociais. Travessias, 5(3), 196–207.	ICTs	Education, distance learning	Journal	PT
Morigi, V. J., & Silva, M. L. da. (2005). Paradigma tecnológico e representações sociais dos bibliotecários sobre seu perfil e suas práticas no contexto da sociedade da informação. Informação & Sociedade: Estudos, 15(1).	ICTs	Libraries & librarians	Journal	PT
Martínez Restrepo, C. A., & Hurtado Vera, G. G. (2005). Nuevas tecnologías y construcción de representaciones sociales. El Hombre y la Máquina, (20-21), 24–29.	ICTs	Appropriation & meaning making	Journal	ES
Roy, V. (2011). College Teachers' Social Representations of Pedagogical Mediation and the Process of Mediatization When ICTs Are Used in Blended Learning and Distance Education. World Conference on E-Learning in Corporate, Government, Healthcare, and Higher Education 2011, 2011(1), 1673–1682.	ICTs	Education, distance learning	Conference Proceedings	EN
Ruthven, K., Hennessy, S., & Brindley, S. (2004). Teacher representations of the successful use of computer-based tools and resources in secondary-school English, mathematics and science. Teaching and Teacher Education, 20(3), 259–275.	ICTs	Education	Journal	EN
Santos, M. L. C. dos. (2011). As representações sociais da educação a distância no ambiente corporativo (Bachelor). Universidade de Brasília, Brasília, Brazil.	ICTs	Lifelong learning, distance learning, work environment	Thesis (Bachelor)	PT
Sarrica, M. (2010). ICTs Meanings and Practices: Contributions from the Social Representation Approach. In Tales of the Unexpected: Vision and Reality in Community Informatics. Prato, Italy.	ICTs	Appropriation & meaning making	Conference Proceedings	EN
Sarrica, M. (2011). ICTs Meanings and Practices: Contributions from the Social Representation Approach. The Journal of Community Informatics, 6(3), 1–10.	ICTs	Appropriation & meaning making	Journal	EN
Sarrica, M., Grimaldi, F., & Nencini, A. (2010). Social Representations Of Citizenship And Multimedia Use Practices: An Exploratory Research With Young People. Revue Internationale De Psychologie Sociale, 23(4), 37–62.	ICTs	eGovernment	Journal	EN

Silva, A. M. T. B. da, & Borges, M. da G. (2007). A contribuição da teoria das Representações Sociais para a discussão sobre tecnologias e inclusão digital na Educação. In ANAIS DO XIV ENCONTRO NACIONAL DA ABRAPSO (pp. 1–14). Rio de Janeiro, Brazil.	ICTs	Education	Conference Proceedings	PT
Silva, A. M. T. B. da. (2007). A teoria das representações sociais no estudo sobre o processo de apropriação das tecnologias da informação e comunicação. Revista Triângulo, 5(1).	ICTs	Education, appropriation & meaning making	Journal	PT
Silva, A. M. T. B. da. (2011). O olhar da Teoria das Representações Sociais para a prática profissional do professor da área das Ciências e da Matemática: reflexões sobre o processo de apropriação das Tecnologias da Informação e da Comunicação. In VIII ENPEC Encontro Nacional de Pesquisa em Educacao em Ciencias (pp. 1–11). Campinas, Brazil.	ICTs	Education, appropriation & meaning making	Conference Proceedings	PT
Silva, A. M. T. B. da. (2013). O Processo de Apropriação das Tecnologias na Prática Profissional dos Docentes da Área do Ensino das Ciências e Matemática: um estudo preliminar a partir da teoria das representações sociais. ALEXANDRIA Revista de Educa ção em Ciênc ia e Tecnologia, 6(2), 33–52.	ICTs	Education, appropriation & meaning making	Journal	PT
Silva, E. V. D. (2010). As representações sociais da avaliação da aprendizagem em cursos de licenciatura em matemática on-line (Master). Universidade Federal de Pernambuco, Pernambuco, Brazil.	ICTs	Education, evaluation of learning	Thesis (Master)	PT
Diallo, A., & Thuillier, D. (2004). The success dimensions of international development projects: the perceptions of African project coordinators. International Journal of Project Management, 22(1), 19–31.	Dev	development projects	Journal	EN
Duarte, S. J. H., de Andrade, S. M. O., & Mamede, M. V. (2009). Maternal decision on obtaining prenatal care: a study in Brazil. Midwifery, 27(2), 160–164.	Dev	health-care	Journal	EN
Kessi, S. (2011). Photovoice as a Practice of Re-presentation and Social Solidarity: Experiences from a Youth Empowerment Project in Dar es Salaam and Sowet. Papers on Social Representations, 20(7), 1–27.	Dev	stigma, community life and development	Journal	EN
Meda, S. G. (2011). Wasted childhood? Social representations and identity of the children living on the streets of Nairobi (Doctoral dissertation). Università Cattolica del Sacro Cuore, Milan, Italy.	Dev	stigma, gender, street children	Thesis (PhD)	EN
Moore, A. R., & Oppong, J. (2006). Sexual risk behavior among people living with HIV/AIDS in Togo. Social Science & Medicine, 64(5), 1057–1066.	Dev	health-care	Journal	EN
Ramírez, M. M. (2011). Política social, identidad y ciudadanía: la asistencia social vista por quienes la reciben. Cultura y Representaciones Sociales, 5(10).	Dev	social assistance (education, health, food, financial)	Journal	ES
Winskell, K., Hill, E., & Obyerodhyambo, O. (2011). Comparing HIV-related symbolic stigma in six African countries: Social representations in young people's narratives. Social Science & Medicine, 73(8), 1257–1265.	Dev	health-care	Journal	EN
Winskell, K., Obyerodhyambo, O., & Stephenson, R. (2011). Making sense of condoms: Social representations in young people's HIV-related narratives from six African countries. Social Science & Medicine, 72(6), 953–961.	Dev	health-care	Journal	EN

* Aguirre, L., Vannini, S., Rega, I., & Cantoni, L. (2013). Fictional Characters, real data: Personas depicting Staff and Users of Community Multimedia Centres in Mozambique. In Into the Future: Themes, insights and agendas for ICT4D research and practice (pp. 917–933). Ocho Rios Jamaica.	ICT4D/RE-ACT	Access to ICTs	Conference Proceedings	EN
* Van Zyl, I., & Vannini, S. (2013). Participatory re-action: reflecting on a Design-Based Research approach in ICT4D. In Public and private access to ICTs in developing regions. Proceedings of the 7th International Development Informatics Conference IDIA 2013. (pp. 206–223). Bangkok, Thailand: Steyn, J., Van der Vyver, A.G. (eds.).	ICT4D/RE-ACT	Access to ICTs	Conference Proceedings	EN
* Vannini, S., Aguirre, L., Rega, I., & Cantoni, L. (2013). Images of Community Multimedia Centres in Mozambique: a participatory photo-elicitation study. In Into the Future: Themes, insights and agendas for ICT4D research and practice (pp. 348–362). Ocho Rios Jamaica.	ICT4D/RE-ACT	Access to ICTs	Conference Proceedings	EN
* Vannini, S., & Rega, I. (2012). Inbound and Outbound Information and Communication flows: Perspectives from Community Multimedia Centres in Mozambique. In CIRN 2012 Community Informatics Conference: "Ideals meet Reality" Monash Centre. Prato, Italy.	ICT4D/RE-ACT	Access to ICTs	Conference Proceedings	EN

Languages in the table are abbreviated, with EN standing for English, FR for French, PT for Portuguese, ES for Spanish, and IT for Italian.

*Conference proceedings papers on the topic that were written about the project RE-ACT are listed at the bottom of the table as a reference, but were not included in this literature review.

2.5.1. Social Representations & ICT4D

Results from the search on the literature show how the theory of SR is quite unexplored within the realm of ICT4D. A total of only six (6) documents were found that already used the SRT in this field. Three of them are journal articles, two are proceedings from international conferences, and one is a doctoral dissertation. Three documents (the PhD dissertation and the two conference proceedings) concern studies developed at the Università della Svizzera italiana (Lugano, Switzerland), to which the author of this work is affiliated. The studies, though, are not related to the project discussed in this work.

Of the six documents, five are in English and one in Portuguese. Out of the ones in English, four were written within European Universities, and one between a Latin American and a North American University. The studies reported in the documents witness research outcomes from Africa (three items), Europe (one item), and Latin America (one item). The article in Portuguese was produced in and applied to a Brazilian context. All documents were published only very recently, from 2006 to 2011. Table 2.4 summarises the documents that were found that apply SRT to the domain of ICT4D, while the following sections will discuss the thematic areas tackled in the corpus.

Table 2.4: Corpus of documents applying the SRT to the domain of ICT4D (# 6).

SR & ICT4D		#
Language	EN	5
	PT	1
Publication typology	Journal	3
	Conf. Proceedings	2
	Thesis (PhD)	1
Year of publication	2006	1
	2010	2
	2011	3
Region of Production*	Europe	4
	Latin America	2
	North America	1
Region of Application*	Africa	3
	Europe	1
	Latin America	2

*The categories "Region of production" and "Region of application" allow for a document to be assigned to more than one sub-category.

2.5.1.1. Thematic areas in the literature on SR & ICT4D

The documents that were found can be ascribed to seven different areas of the ICT4D field (access to ICTs, eParticipation, eGovernment, Information and Communication Technologies for Education, appropriation and meaning-making of technologies, gender, and identity preservation). Three out of the six studies treat the theme of *access to ICTs* in developing countries, considering, more specifically, telecentres. Two of them (Rega, 2010a, 2010b) report on the work developed within the Università della Svizzera italiana (Lugano, Switzerland) with four *eGovernment* telecentres (Cape Access Centres – CAC) in the South African region of the Western Cape. The two works used the SRT with the aim of comparing different social groups' perspectives on telecentres, and especially to underline misalignments in their conceptualizations both between agencies funding and initiating the venues and staff members who worked there, and between staff members and the community where the centres were operating. Misalignments are indicated as a factor potentially hindering the sustainability of the initiative. Sustainability here is intended as including extra-technological factors, such as psychological and social issues (Rega, 2010b). According to Rega, ignoring these misalignments could compromise the ability of funding organizations and staff members to create awareness and provide relevant content and services to the communities, to support local information needs, and, more in general, to involve the local actors in the activities of the venues. In this sense, the SRT is presented as a methodology for "detecting the unexpected" (Rega, 2010a), one of the issues that is so often compromising the realisation and success of ICT4D initiatives (Heeks, 2010; Van Zyl & Vannini, 2013). The study from Rega (2010b) can be ascribed also to the theme of *appropriation and meaning-making* of ICTs. Furthermore, she affirms that "changing representations after they have been formed will probably be more difficult than shaping them from the outset" (Rega, 2010a, p. 10), thus implying that the introduction of systematic and iterative evaluations including a social representations component in ICT4D could help cope with misalignments in conceptualisations among the different stakeholders and permit the design of different, adjusted activities (Van Zyl & Vannini, 2013).

The third study treating the theme of access to ICTs uses the theory of social representations together with the theories of social networks and social identity (Bailey & Ngwenyama, 2011). The theme of access is paired with the one of *eParticipation*. The theory of social representations was used in this study to explore the meanings that different social

groups of telecentre users attribute to ICTs. The way social representations were formed was also studied, highlighting how informal communication plays a conspicuous role in it. The process with which SRs are formed emphasised also that people in the community perceived ICTs and their potential for participation as related to their own experiences with other media. The investigation shed light on how inter-generational interactions in telecentres facilitate (i) older community members, (ii) low-income, and (iii) technology-challenged social groups to access and use ICTs. Interactions served also to strengthen social ties and knowledge sharing across generations, and helped expanding the relevance of the telecentres to the communities. Also in this case, outcomes from the study have implications on policies of telecentres: according to the authors, inter-generational interactions should be promoted in policies being formulated in the area of ICT4D.

The area of eParticipation is also considered in the article by Siddiquee & Kagan (2006), studying refugee women's engagement with the internet and its impact on their empowerment and identity. Set in the UK, this is the only research included in this section that is not located in a developing country. The decision to include it is due to the affinity and relevance for ICT4D studies of the themes it deals with. The study of *gender* reports on how technological engagement can help immigrant women to maintain links and re-build their social networks, thus facilitating their integration and resettlement in a new environment, and preserving and "developing social *identity*, community narratives, and raising collective consciousness" (Siddiquee & Kagan, 2006, p. 203). Social representations outcomes are used in the study to contextualise the engagement with technology within participatory processes: according to the authors, "technological engagement provides individual level empowerment and identity developing processes, and reciprocally interacts with consciousness-raising and social representations to augment empowerment and identity boundaries" (ibid., p. 203). Subjectivity and individual agency components are taken into account in the process of SR negotiation and formation:

> *As the model illustrates, digital technology fosters individual agency and action within participatory processes, intermittently shifting the focus from the individual to the collective (Siddiquee & Kagan, 2006, p. 204).*

A fifth paper is a work developed again at the Università della Svizzera italiana, and refers to a research and development project named MELISSA (projectmelissa.blogspot.ch), carried out in the South African Western Cape (Rega & Van Zyl, 2011). MELISSA worked

with primary school teachers in disadvantaged areas of the province and positions itself within the realm of *Information and Communication Technologies for Education* in developing regions (ICT4E). The use of social representations in the study meant to investigate MELISSA educators' beliefs around ICTs, and to reflect upon differences between groups that have or have not been exposed to technology training. Outcomes from the study, further than differences in the complexity of meanings attached to technologies between the two groups, reveal a discrepancy between qualitative and quantitative data generated with respect to MELISSA, which calls for reflections on the potentialities and limits of the methodology to elicit social representations.

The last paper of this section is also positioned within the realm of ICT4E. The study is part of a lifelong learning course directed to teachers from public and private schools in Brazil (da Silva, Constantino, & Premaor, 2011). The course was integrated to a broader international cooperation project (www.univirtual.it/miforcal), aimed to build instructional exchanges among teachers in Latin America and Europe, to implement experimental and interdisciplinary trainings, and to understand contextual differences relevant to the field. Teachers' social representations of virtual learning environments were studied through the analysis of the discourse and of relationships of meanings in an online forum. In line with teachers-computer self-efficacy research (Fanni, Rega, & Cantoni, 2013), outcomes of this study show how teachers need to feel confident with, and not threatened by, technological resources. Authors of this work do not consider Brazilian teachers' settings as a development context, which distinguish this work from the others presented in this section. Yet, the article was included in this section as it was explicitly part of an international cooperation project set in a BRICS country. The Brazilian framework is presented as a changing reality, where technologies appeared as one of the many challenges (and opportunities) of ongoing transformations. Teachers are considered a social group that is able to generate social representations about technologies and to disseminate them in the scenery of education. SRT is used as an analytical tool to understand the process of knowledge making and appropriation of new social phenomena. Table 2.5 summarises the relevant themes of the documents analysed in this section.

Table 2.5: Areas of ICT4D considered within the corpus of documents applying SRT to ICT4D field.

SR & ICT4D	
Area	*#*
Access to ICTs	3
eParticipation	2
eGovernment	2
ICT4E	2
Appropriation and meaning making	1
Gender	1
Identity preservation	1

Each document could be assigned to more than one area (# 6 documents).

2.5.1.2.   Methods of data generation and analysis

Despite that fact that studies do not always make it explicit, and in line with what advocated by Farr (1993), the majority of the studies (four out of six) apply a mixed-methods investigation design (Creswell & Clark, 2011), combining a range of qualitative data generation methods (including in-depth and semi-structured interviews, ethnographic observations, written interactions), with quantitative ones (surveys).

Thematic content analyses were performed on the data of all six studies. Four of them further specified they employed the Computer Assisted Qualitative Data Analysis Software (CAQDAS) Atlas.ti. Finally, one study applied grounded theory principles. Table 2.6 summarises the methods used in the six papers analysed in this paragraph.

Table 2.6: Summary of methods used in studies of SR & ICT4D.

Data Generation	
	#
Interviews	5
(Participant) observations	3
Online forums interactions	1
Surveys	1
Data Analysis	
	#
Thematic analysis	6
of which CAQDAS	*4*
Grounded Theory	1
Descriptive statistics	1

Each study could apply more than one method (# 6 documents).

2.5.1.3. Wrapping up on SR & ICT4D

The analysis of the studies in this section shows how the theory of social representations is a new and still little studied, yet promising, approach to ICT4D. All documents included in this section were published after 2010, except for the one by Siddiquee & Kagan, dated 2006.

Despite the extensive use of SRT for applied studies in Latin America, the majority of the studies treated in this section were written within European Universities. Two were effectively produced in Latin America and the Caribbean, and one in collaboration with a Canadian institution. No study was found that was produced in an African, Asian, or Australian context. Nonetheless, half of the studies were applied to a sub-Saharan African setting.

The theory of social representations was applied to five different themes of ICT4D: Access to ICTs, eGovernment and eParticipation, Education, Gender, and Identity of Minority Communities. Although limited, this corpus of literature revealed how SRT can indeed be relevant in ICT4D for different purposes:

- SRT contributes in operationalizing the need for contextualisation, which scholars in the field have been advocating for in the last years (Brunello, 2010; Heeks, 2003; Kleine & Unwin, 2009; Tedre et al., 2006; Unwin, 2009);

- The theory allows to understand and compare different social groups' conceptualisations of technologies, thus enabling researchers to report to policy-makers and to raise awareness on local perceptions, appropriation, and practices related to ICTs;

- SRT fits well with participatory processes, and allows to focus on the interactions between individual and collective agency;

- SRs are suitable for uncovering the unpredicted, thus possibly allowing to deal with unforeseen outcomes and to intervene timely in the design of improved activities.

The field, nonetheless, remains a niche of few studies. Applying the approach to other cases and different contexts is undoubtedly relevant to the research on both social representations and ICT4D.

A further insight is given on methodological issues applied in the studies analysed. Most studies employed a mixed-methods approach (Creswell & Clark, 2011), almost entirely

limited to interview generation and content analysis. Exploring different methods of data generation and analysis, in line with social representations studies performed in other areas, could enrich the reflection on the field, allow for a better triangulation of results intra- and inter- project, and offer deeper practical insights to interventions in ICT4D. As presented in the next sections, further methods include, and are not limited to:

- Analysing the so-called "lexical universes", i.e. terms and vocabularies imposed by speakers and referring to the phenomena at stake, by means of automated text analyses and distributional approaches to map association and co-occurrences of words within discourses, as proposed by Reinert (1983; 1993);

- Analysing central and peripheral systems of social representations, a method of analysis proposed by Abric (1994) and arguing that social representations are internally organized in two systems that would account for their contradictory nature as at the same time stable and mutable, rigid and flexible, consensual and marked by differences among different social groups;

- Using further methods of data generation beyond interviews and surveys. Some interesting ways to understand social representations might be given by projective methods (Abt, 1950), specifically designed to yield less rationalised information and elicit more genuine responses. Examples of this methods include the use of LEGO bricks (Cantoni, Faré, & Frick, 2011; Rapetti, Butti, Misic, Botturi, & Cantoni, 2009), mental maps (Botturi, 2006), and photos (Rose, 2007; Van Auken, Frisvoll, & Stewart, 2010).

This work will address the methodological scarcity observed in this domain, by applying different methods of data generation and data analysis (see chapter 4), partially alike studies realised in similar domains (see section 2.5.2 and 2.5.3).

2.5.2. Social Representations & ICTs

Contrarily to the domain of ICT4D, the field of Information and Communication Technologies has been investigated extensively from the perspective of social representations. As reported by Sarrica (2011), and in line with Markovà's (2003) concept of social representations and dialogical products of the human mind, ICTs are theoretically an interesting and appropriate subject for SRT. First of all, they are "problematic", "they are

multifaceted and their pros and cons rise continuous debates and sidings" (Markovà, 2003, p. 4). Secondly, ICTs are perceived differently in different environments, depending on the history and socio-cultural background of each context (Jovchelovitch, 2007), which makes of their study an interesting ground for comparisons for intercultural and longitudinal studies. Finally, ICTs' relevance in today's society is such that communities are pressured to familiarise and cope with them, making of them an urgent theme for both academia and the civil society to discuss.

A total of 36 documents addressing the topic of ICTs was found. As initially expected, the majority of retrieved documents were produced in Latin America and the Caribbean (20), shortly followed by the ones produced in Europe (15). Only two of the studies were conducted in North America, one of which in the US in collaboration with a European University, and the other one in Canada. Accordingly, the majority of the documents (18) were written in Portuguese, 14 in English, and four in Spanish. In this case, all the studies were applied in the regions they were produced, except for one study that considered a global perspective (indicated as "all" in table 2.7). From this data it is possible, indeed, to affirm that the theory has found its fortune in Europe and Latin America, as discussed in section 2.4.1.

The majority of the documents found are journal articles (21). Six (6) conference proceedings papers, three chapters of books, and three theses (out of which, four Masters' and two Bachelors') complete the literature analysed. The timeline production of the documents shows that the SR construct has begun to be applied to the study of ICTs since the moment digital technologies started to be adopted as everyday tools, at least in the Western world. Starting from 2002, SRT is adopted within the field. Table 2.7 summarises the documents found on the application of the SRT to studies concerning ICTs.

Table 2.7: Corpus of documents applying SRT to ICTs (# 36 documents).

SR & ICTs		
		#
Language	PT	18
	EN	14
	ES	4
Publication typology	Journal	21
	Conf. Proceedings	6
	Thesis (Master)	4
	Book chapter	3
	Thesis (Bachelor)	2
Years of publication	2002	1
	2003	1
	2004	1
	2005	2
	2006	2
	2007	4
	2008	3
	2009	1
	2010	8
	2011	8
	2012	4
	2013	1
Region of Production*	Europe	15
	Latin America	20
	North America	2
Region of Application*	All	1
	Europe	14
	Latin America	20
	North America	2

*The categories "Region of production" and "Region of application" allow for a document to be assigned to more than one sub-category.

Sixteen (16) of the 36 studies retrieved apply the theory of Social Representations to explore the meanings attached to (potentially) all ICTs. Others are focused on some specific aspect of technology: the Internet and Learning Management Systems are the most common ones, in eight and seven documents respectively. Five (5) studies focus on computers, three on mobile phones, and one on TV as a blended learning tool. Finally, virtual communities and

social media are considered, each in an individual study. Table 2.8 presents the different aspects of ICTs within the corpus of studies retrieved.

Table 2.8: Corpus of documents divided by ICTs considered.

SR & ICTs	
ICTs considered*	**#**
(Potentially) all ICTs	16
Internet	8
Learning Management Systems	7
Computer (desktop & laptop)	5
Mobile Phone	3
Virtual Communities	1
Social Media	1
TV	1

*Each document could be associated to more than one category.

Social representations are applied to a wide range of themes and areas where ICTs have an influence. The most recurrent theme within this corpus is education (19 documents found), including the topics of distance learning (five documents) and evaluation of learning through ICTs (one document). A good number (14) of studies dealing with meaning making and appropriation of technologies was also found. Other studies engage with the themes of the introduction of ICTs in work environments (three), ICTs and innovation (one), eGovernment (one), changes in the role of libraries and librarians and within journalism (one), non-adoption of technologies by the elderly (one), ICTs and studies of gender (one), and the relationship of ICTs adoption and social well-being (one).

Table 2.9 presents the corpus of documents by themes, while the following sections will describe the purposes and outcomes of the application of SRT for each of the themes identified in the literature.

Table 2.9: Corpus of documents divided by thematic area discussed.

SR & ICTs	
Thematic area*	**#**
Education	19
of which distance learning	*5*
of which evaluation of learning	*1*
Appropriation & Meaning Making	14
Work Environment	3
Social Well-Being	1
eGovernment	1
Elderly Adoption	1
Libraries and librarians	1
Lifelong Learning	1
Innovation	1
Gender Studies	1
Journalism	1

*Each document could be associated to more than one theme.

2.5.2.1. Thematic areas in the literature on SR & ICTs

Eleven (11) different themes were identified in the literature included in this domain. Two of them (education and technology meaning making and appropriation) are abundantly studied, while the others appear in the corpus with very few documents. The following sub-sections will present them in detail.

Education, distance learning, and lifelong learning

In the corpus of documents retrieved, the theme of ICTs in learning is much recurrent and tackles the areas of *education within schools and universities* and of *on the job professional training*.

Eighteen (18) studies engaged with the theme of ICTs in education from both the perspectives of teachers and educators on the one hand, and from the students and learners on the other hand. The studies aimed to address different issues related to the introduction and everyday practices of ICTs in education. The majority of them (15) were produced and applied in Latin America and the Caribbean, three in Europe, and one in North America. One study assumed a global perspective.

The analysis of the themes tackled within this corpus revealed the studies focused on different issues. First, they deal with representations of *classroom practices* by teachers and learners of compulsory schooling and college, investigating: digital inclusion in schools, appropriation of ICTs in teachers' practices, the role played by teachers in dealing with teaching and learning through ICTs, and the relationship between teachers' or students' representations of ICTs and their teaching and learning process within formal education (Abdalla & Rocha, 2010; Madeira et al., 2002; Maraujo & Maraujo, 2009; Ruthven, Hennessy, & Brindley, 2004; A. M. T. B. da Silva & Borges, 2007; A. M. T. B. da Silva, 2011, 2012, 2013). Second, the *conditions by which pedagogical processes are supported* at school are studied, with the aim to establish epistemological criteria for the development of a conceptual perspective about technology, to suggest and implement successful practices into teaching that take advantage of ICTs, and to reflect on theoretical and methodological support needed for school activities (Cruz & Marinho, 2012; Gondim, 2012; López, 2012). Third, the integration of ICTs in *blended and distance learning* is tackled, again by both the teachers' and the learners' point of views. Social representations aim to investigate how to integrate ICTs according to the purposes of didactic mediation, the information culture permeating the teaching-learning processes when they are not in presence, the interrelation between distance education and the construction of knowledge, together with the relationship among teacher and learners, and evaluation practices and their representations within virtual environments (Araújo, 2011; Conceição, Silva, & Euzebio, 2011; Farias, 2011; Moreira, 2011; Roy, 2011; E. V. D. Silva, 2010). The *integration of scientific academic communities* into virtual environments and benefit from them is also discussed (de Rosa, 2006). Finally, the use of ICTs to deliver *specific educational content* at school, in this case gender-related studies, is investigated (Araujo, 2010).

The aim of these studies is to understand ICTs as socio-cultural constructions, pertaining to different actors, evolving towards a democratic idea of education for all, and situating the issue in a specific and broader context. Furthermore, it is considered that school pedagogical practices incorporating technologies are and will be anchored most of all to the representations that teachers have of them. Thus, it is suggested and recommended to consider teachers' social representations of ICTs in order to inform teachers' trainers and policy makers, innovate teachers' practices, and make technologies more effective in learning

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(Araujo, 2010; Cruz & Marinho, 2012; Maraujo & Maraujo, 2009; Ruthven et al., 2004; A. M. T. B. da Silva, 2012).

Finally, one study from Brazil engages with the theme of distance learning through ICTs from a different point of view: lifelong learning at the workplace (Santos, 2011). The research connects social representations of ICTs and the choice of attending a professional distance learning course, shedding light on responsibilities, engagement and autonomy issues.

Outcomes of these studies reveal how social representations *helped identify advantages and shortcomings* of ICTs in educational practices according to the social groups using them for teaching or learning. Among the advantages often cited it seems relevant to mention: (i) the association of technologies with more entertaining and playful situations, able to reach learners more effectively; (ii) improved productivity and accuracy; (iii) the ability of reaching different kinds of learners through the diversification of methods, and of the flexibility of content consumption in terms of time and space; (iv) fostering independence, collaboration, and peer learning; and (v) fostering new forms of communication and improving access to updated information. But the introduction of ICTs into learning practices brought dissonant voices about their impact on education, and in some cases, a considerable distance between teachers' ideas and practices with ICTs is noticed. Most frequent ICT pitfalls identified by SR analysis include: (i) teachers' reluctance due to their sense of inferiority regarding their students' skills with ICTs; (ii) teachers feeling threatened in their role as teachers; (iii) teachers' concern of sharing education resources online; and (iv) the concern that the quality of education will decrease.

Generally speaking, the role of the teacher is emphasised, as well as the implications the introduction if ICTs have in their profession. Implications of the results fall back on the *need of more reflection and research* on the issue, better (and more) teachers' training programmes, and *more inclusive policies*, for which the study of social representations could be beneficial. The role of the teacher is changing, focusing more and more on their role of mediators of learning and less on their title of keepers of knowledge. As a theory of change (Markovà, 2003), SR is helping by *identifying the mismatch* between theoretical reflections and practical everyday activities and suggesting that more grounded and contextually adapted models may be needed to integrate ICTs into teaching practices.

Appropriation of ICTs and meaning-making

Fourteen (14) studies engaged with the theme of appropriation of ICTs and meaning making of technologies, making of this theme the second longest one within the corpus of SR & ICTs studies. Europe is the main area of production and application of these studies (nine documents retrieved), followed by Latin America and the Caribbean (five), and North America (one).

The rationale for looking at ICTs appropriation from a social representations perspective lays in the fact that from a theoretical point of view, ICTs are considered an appropriate and interesting subject to be studied (Fortunati & Manganelli, 2008; Sarrica, 2011):

- *ICTs are problematic, they are multifaceted and their pros and cons rise continuous debates and sidings;*
- *The meanings of ICTs are context dependent and are often linked to history and socio-cultural backgrounds;*
- *The relevance of ICTs in everyday life exerts pressure on communities that are asked to interpret and to cope with technological advances.*

(Sarrica, 2011, p. 5)

Furthermore, ICT is a field where the "discrepancy between scientific knowledge and laypeople's knowledge" is evident: SR would give the analytical means to understand these discrepancies (Sarrica, 2011, p. 5). Not only, then, ICTs would contribute to the theoretical speculation on SR, but, vice versa, SRT would help shed light on the phenomenon of ICTs.

The purposes of the studies in this corpus are threefold: first, to understand *the way in which ICTs have been domesticated and integrated* in the domestic, public, and work spheres at the socio-cognitive level. Thus, to explore attitudes towards ICTs, examine their role in everyday life, and understand the shared knowledge different social groups have of them (Capozza, Falvo, Robusto, & Orlando, 2003; Contarello & Sarrica, 2007; Contarello & Fortunati, 2006; Contarello et al., 2008; Fortunati & Manganelli, 2008; Sarrica, 2010).

Second, to situate the introduction of ICTs in a broader social context, and *study the social changes linked to their adoption* (Contarello et al., 2007; Gutiérrez Vidrio, 2010; Restrepo & Vera, 2003; Silva, 2011, 2012, 2013).

Finally, to propose *the theory and its methodology as suitable for research in different areas of ICTs*, including community informatics (Sarrica, 2010; 2011) and information

systems implementation (Gal & Berente, 2008). This last fact pointing to the novelty of research in ICTs which, consequently, is still being observed with new approaches and lenses.

Also in this case, outcomes point to *ambivalent attitudes* towards ICTs, in which multifaceted positive features are merged with negative ones (Contarello & Fortunati, 2006). Typically, a perception of easier communication possibilities is intersected with reducing privacy, experiences of more access to information are intersected with a perception of information overwhelm, and opportunities for improving and maintaining a socially-relevant network is intersected with feeling of an unsecure open, public space.

Outcomes focus also on the functions that ICTs fulfil in people's lives and how their *perception of functions influence their use* (Contarello & Sarrica, 2007; Contarello et al., 2007; Sarrica, 2010). The perspective of social representations allowed some studies to focus also on the *evolution in time* that SR of different ICTs experienced, being anchored at first to the realm of the already known and acquiring little by little their own peculiar characteristics. In this respect, the representations of some ICTs followed a sort of spiral, starting from the features of the old media they were anchored to, becoming attractive but dangerous tools (Contarello et al., 2007) and going back to the functional description of the old media once they had been adopted by the majority of the population. In other cases, ICTs evolved from objects defined in ambivalent terms, to functional, symbolic, social items (ibid.). Outcomes of these studies agree that the coexistence of apparently contradictory representations of ICTs, or "cognitive polyphasia" (Moscovici, 1961) might indicate either a different appropriation of ICTs by different social groups, or that representations are still being elaborated and meanings negotiated.

The social representations approach in these studies was mainly used as an effective strategy for exploring the ways in which social groups make sense of something new, unusual, or much debated, how people domesticate ICTs at a socio-cognitive level, and the evolution of meanings attached to them. Identified benefits of the theory include the fact that *it focuses on the same process of communication* by which meanings are shaped by group members, emphasizing the *dynamism* of the representations and the *processes* that lead to structuring them (Gal & Berente, 2008). Representations of objects are dependent on time. By examining anchoring and objectification processes (Moscovici, 1961) researchers are able to provide valuable *knowledge on pre-existing conceptions* of ICTs, as well as *identifying and mitigating cultural issues* associated with resistance to technology.

Finally, the theory acknowledges the *wide social context* which representations depend from and is able to highlight *power relations* that underlie the construction of social knowledge (Gal & Berente, 2008; Martínez Restrepo & Hurtado Vera, 2005), as "the production of collective accounts is never a neutral affair" (Gal & Berente, 2008, p. 149).

Minor themes

Eight more themes were identified in the corpus of literature. Three studies tackled the use of ICTs in work environments from a SR perspective. Their purposes were to understand the consequences of the introduction of ICTs on economy (Gutiérrez Vidrio, 2010), on innovation (Andrade, Muniz, & Silva, 2010), and as mentioned above, on professional training (Santos, 2011). The studies provided as methodological outcomes the analysis of interviews from an argumentative framework (Gutiérrez Vidrio, 2010), as well as theoretical outcomes regarding the applicability of distance learning activities to work environments.

Secondly, ICTs' representations are connected to *social well-being* (Contarello & Sarrica, 2007) as individuals were found to link the appearance of the internet in their lives with a feeling of higher contribution, understanding, and closeness to their own community and society in general.

An article on the deliberate *non-adoption of the internet by elderly people* in Finland (Hakkarainen, 2012) focuses on the way elderly construct their shared understandings, on what kind *of images they use* to portray the computer and the internet, and how *SR express individuals' different interests, identities, history, and culture*. The general perception is that "the computer and the internet are useless and risky 'tools and things' that threaten one's freedom, lifestyle, health and security as well as create differences between users and non-users." (ibid., p. 1198). This is the only study where the perception of ICTs is completely negative, as opposed to research on social representations and adoption of computers and the internet by young people (Capozza et al., 2003; Contarello & Sarrica, 2007).

Araujo's analysis on the social representations transmitted by educational TV content (2010) enters the discourse of *gender studies*, highlighting the power educational media have on the construction of social representations and advocating for more reflection and awareness of these issues.

A further study tackles the theme of *eGovernment* to see how different representations of ICTs are linked with different ideals of citizenship (Sarrica, Grimaldi, & Nencini, 2010).

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Surprisingly, more frequent users of the internet encourage a restricted and partisan representation of citizenship and not to the 'new humanity' advocated by the public rhetoric on the web. This representation might refer to the ambivalent representation of the internet experience "bound to a diminished trust in people outside, counterbalanced by help and comfort from one's own group" (Contarello & Sarrica, 2007, p. 1030).

The dynamicity of social representations (Markovà, 2003) is keenly applied also to a study on the changing role of *librarians* (Morigi & Silva, 2005). Their traditional activities have been affected by technological mediation as much or even more than teachers' activities and new practices are appearing within their professional environment. Social representations of librarians and libraries are changing as well. While libraries are more and more perceived as places to exchange, not retrieve, information and ideas, librarians are experiencing the tension of re-discussing and re-defining their own roles.

Finally, one study deals with the theme of the influence and relationship between social media and *journalism* as represented by the discourses of newspapers (Bacallao Pino, 2010). The study pursues a contextualized understanding of the differences between social networks and more traditional media as representatives of the characteristics and dynamics of web 1.0 and web 2.0. Providing a methodology for the analysis of journalistic discourse was a further goal of the study. A quite negative representation of social networks by the media emerges, emphasising more the dangers and negative uses of these resources than their positive potential.

2.5.2.2. *Methods of data generation and analysis*

The corpus on SR & ICTs presents a wider set of methods for data generation and data analysis than the corpus of SR & ICT4D. This could depend on the fact that the corpus is larger, and the background of the scholars who conducted these studies is more varied and multidisciplinary, than on the field itself. Also, in this case, a mixed method approach was generally preferred, combining quantitative and qualitative data. In this case, quantitative methods were used also for data collection.

Regarding data generation, questionnaires and enquiries using the method of free association of words (Thurschwell, 2009) were the most common, present in 12 studies each. Nine (9) researches used different kinds of interviews, the most common method in the corpus of SR & ICT4D studies. Seven (7) studies were reflections and partial reviews of the literature on SR & ICTs, indicating that the field has advanced more than the field of SR &

ICT4D. Four (4) studies used focus groups, and three asked to participants for written accounts. Finally, two studies used text published in the media, two used observations, and one used video content.

Table 2.20: Methods for data generation and data analysis used within the corpus of studies about SR & ICTs.

Data Generation	
	#
Questionnaires (in presence, online, or telephone)	12
Free association of words	12
Interviews (semi-structured, narrative, laddering…)	9
Literature review & reflections	7
Focus groups	4
Written accounts	3
Textual media	2
Observations	2
Video content	1
Data Analysis	
	#
Content Analysis	13
Correspondence Analysis	7
Reflection	7
Central-core vs. Peripheral System	6
Descriptive Statistics	3
Hierarchical Cluster Analysis	2
Advanced Statistics	2

*Each study could be associated to more than one method.

Regarding methods of analysis, content analysis of written or transcribed data is the most common (found in 13 documents). When computer-aided, software used are Atlas.ti (Friese, 2012) and NVivo (Bazeley & Jackson, 2013). In certain cases, content analysis was guided by other frameworks, such as argumentation (Grize, 1982), narrative analysis (Franzosi, 2010), and the collective subject discourse (Lefevre & Lefevre, 2007). Very diffused is also the use of correspondence analysis on textual data (7 studies), with the aid of the software SpadT (CISIA, 1989) or Sphinx Lexica (Sphinx Développement, 2013). Seven (7) studies operated a critical and thematic reflection on the literature, and six performed the analysis to identify the central-core and peripheral elements of social representations by using

the software EVOC (Vergès, 1999). To a lesser extent, descriptive and advanced statistics (three studies) and hierarchical cluster analysis (two) were used, with the aid of the software IBM-SPSS (Sweet & Grace-Martin, 2012), ALSCAL (Young, 1979), and Tri Deux Mots (Cibois, 2013). Table 2.10 presents the methods for data generation and data analysis used within the corpus.

2.5.2.3. *Wrapping up on SR & ICTs*

The analysis of the corpus of studies concerning SR & ICTs shows how this field is being explored from several points of view in interdisciplinary fields, mainly in Latin America and the Caribbean and in Europe. While ICT-enabled education and training and technology appropriation are the most recurrent themes, studies have already tackled issues such as: eGovernment, gender studies, changes in the roles of libraries and librarians, journalism, and innovation. Scholars reveal how research applying SRT to ICTs phenomena is interesting and beneficial on a double perspective: both SR and ICTs fields can enrich each other reciprocally.

Some interesting aspects emerging from this analysis are:

- A longitudinal perspective is often applied, showing how SRT is suitable to study changes over time (Contarello et al., 2007; Contarello & Sarrica, 2007). The field of ICT4D could benefit from doing the same, which would require the development of strategies to conduct long-term research projects;

- The theory fits well when it comes to consider culturally-relevant and contextually-dependent phenomena, as it was claimed by ICT4D scholars applying it (Sarrica, 2011);

- Research on this domain does not intend mainly to compare misalignments in representations by different social groups, else most of the times studies aimed to analyse the social representations of one specific group, or how social representations were transmitted through specific media or actors (Bacallao Pino, 2010; Hakkarainen, 2012). Differently from SR & ICT4D studies, comparison was not the primary intent;

- Similarly, instead, to ICT4D studies, the research was often intended to inform policy-makers on what is happening at the grassroots level (Araujo, 2010; Cruz & Marinho, 2012; Maraujo & Maraujo, 2009);

- Power dynamics in representations construction were mentioned several times, showing how the theory can help identify dynamics of power and their consequences

(Farias, 2011; Morigi & Silva, 2005). This aspect could be given more relevance within the ICT4D field, where dynamics of power are not alien (Kleine & Unwin, 2009);

- Finally, the discussed corpus of studies gave interesting insights on the variety of methods that can be employed within social representations researches. The field of SR & ICT4D could benefit from the application of some of these methods, which would allow for a better triangulation of outcomes, as in cases of statistical analysis applied to textual corpuses along with qualitative methods.

2.5.3. Social Representations & Development

The corpus of documents about SR & Dev is constituted by a total of eight studies, seven in English and one in Spanish. Seven (7) studies were published on journals, while one is a PhD thesis. Studies using SRT within development appear first in 2004, and five out of eight were published in 2011.

Table 2.31: Corpus of documents applying the SRT to studies concerning International development (# 8 documents).

SR & Dev		
		#
Language	EN	7
	ES	1
Publication typology	Journal	7
	Thesis (PhD)	1
Years of publication	2004	1
	2006	1
	2009	1
	2011	5
Region of Production*	Africa	1
	Europe	1
	Latin America	2
	North America	4
Region of Application*	Africa	6
	Latin America	2

*The categories "Region of production" and "Region of application" allow for a paper to be associated to more than one sub-categories.

Regarding their geography, the majority of the studies within this corpus were produced in North America (four): within this literature review, this is the domain where North America is more present. Latin America and the Caribbean follow with only two studies, less than the author would have expected. Europe and Africa are present with one study each. Finally, six studies were applied to cases in Africa and two to Latin America. Table 2.11 summarises the documents retrieved for SR & Dev research.

2.5.3.1. Thematic areas in the literature of SR and International Development

Half of the studies composing the corpus of SR & Dev (four studies) deal with the theme of *health*. In particular, three tackle the issue of HIV/AIDS in Africa, using SRT to explain reasons of sexual risk behaviour and rationalization of HIV transmission (Moore & Oppong, 2006), to inform awareness raising and communication efforts to increase safer practices (Winskell, Obyerodhyambo, & Stephenson, 2011), and to design HIV-related stigma reduction efforts (Winskell, Hill, & Obyerodhyambo, 2011). Cultural context was found to vary considerably among countries, thus influencing sexual practices and people's perceptions of safety. SRT helps in understanding how people justify practicing unsafe sex even when knowing that they put themselves or their partners at risk.

The fourth study categorised under this theme deals with pre-natal assistance and maternal care in Brazil, addressing the social aspects of pregnancy and women's perspectives (Duarte, Andrade, & Mamede, 2009). Participants' representation of pregnancy was found to be negative and connected with many fears. Healthcare professionals should improve (or should be helped to improve) their communication with women to improve prenatal care.

Two (2) studies tackled the theme of *stigma* of marginalised groups. The research by Meda (2011) with street children in Nairobi engages with the theme connecting the negative perception of themselves that children incorporate in their identities as a barrier for their reintegration in the community. Also the study by Kessi (2011), set in Tanzania and South Africa, deals with young people. It opposes institutionalization and normalisation of poverty, a recurrent pattern in underprivileged communities in Africa, to civic engagement. When normalisation of poverty does not occur and individuals do not identify themselves as "victims of poverty", they assimilate themselves among the actors who can enact changes in society.

Each one of the remaining themes identified appear in only one study. First, the theme of beneficiaries' perception of *social assistance* is tackled in Ramírez's article (Ramírez, 2011), set in Mexico. Community groups receiving social assistance often are put in a situation of dependence or differences among social groups are created. The study shows how social assistance is perceived as aid and not as a right. This has an influence in the way people engage civically. Furthermore, in order to be accessed, assistance programs demand people to fulfil certain requirements. This would provoke people to show particular features of their identity (e.g., the poor to appear poor also in the way they dress and look like), which fosters discrimination even more.

Second, the aforementioned phenomenon of Kenyan *street children* is covered. In this case, the study aims to understand street children's representations of street practices and culture, to explore whether research participants can be an entity potentially capable to develop their reflexive experience and actively produce new meanings and new representations (Meda, 2011) and to inform and design development interventions with them.

Third, the theme of *community development* is presented in Kessi's study (2011), which aims to promote community-based activities in which young people are encouraged to build social solidarity and to think about their own representation of themselves. The study highlights how produced images of community life were conflicting, showing both a stigmatized representation of development through racial, post-colonial, and gender-discriminating discourses, and alternative images of resistance and community agency. The study concludes that "it is in the act of social re-presentation that young people are able to recognize the perspective of others, resist stigma and develop alternative conceptualizations of community life, all of which promote networks of social solidarity in the community" (ibid., p.1).

Finally, the theme of *international cooperation* from the managerial point of view of coordinators of multilateral development project in sub-Saharan Africa is presented (Diallo & Thuillier, 2004). The purpose of the research is to shed light on the drivers of development project coordinators in sub-Saharan Africa, to establish a hierarchy among these drivers, understand coordinators' perceptions about other stakeholders' drivers, and to evaluate development projects accordingly. Perception of project success was found to be related with the political environment of international development. Furthermore, each stakeholder was recognised to assess "project success on the basis of evaluation dimensions that fit within his

own agenda or within the interests of the group he represents" (Diallo & Thuillier, 2004, p. 29). Table 2.12 summarises the thematic areas that compose this corpus of studies.

Table 2.42: Corpus of documents divided by thematic area (# 8).

SR & Dev	
Theme*	*#*
Health	4
Stigma	2
Street-children	1
Social assistance	1
Community development	1
International cooperation	1

*Each document could be associated to more than one theme.

2.5.3.2. *Methods of data generation and analysis*

The literature on SR & Dev make use of a number of different methods. The research design is, again, structured mainly through mixed method approaches; however, it is in the data generation methods that it is possible to find the greater variety of methods.

While more traditional methods are applied (interviews are employed in half of the studies, followed by focus groups and observations – two documents each), also photo-diary (the technique according to which participants keep a record – diary – by means of photos), storytelling through photos (production of photographic visual content that is successively put together in order to form a story), and production of movie scripts are used.

Methods of data analysis include: content analysis with different methods in almost all the cases (seven), plot analysis in the case of movie scripts, and statistics in one case. As in the case of SR & ICT4D, qualitative methods of data collection are predominant. Table 2.13 presents the data generation and analysis used within the corpus.

Table 2.53: Methods for data generation and analysis used within the corpus of studies about SR & Dev. # 8 studies.

Data Generation*	
	#
Interviews (semi-structured, in depth…)	4
Focus groups	2
Observations	2
Questionnaires	1
Photo-diary	1
Photo-stories/storytelling	1
Movie scripts	1
Data Analysis*	
	#
Content Analysis (thematic, DCS, ...)	7
Plot analysis	1
Descriptive Statistics	1
Advanced Statistics	1

*Each study could be associated to more than one method.

2.5.3.3.   *Wrapping up on SR & International Development*

The literature dealing with SR & Dev is composed by few recent studies, most of them produced in North America and applied to African contexts. The analysis of this corpus shows how social representations were used to (i) explain cultural influences on practices; (ii) inform the design of interventions or influence policy-makers decisions: (iii) foster participants' reflection; and (iv) find drivers for individuals' actions. As it was found within the domain of SR & ICTs, social representations were generally not used to compare different social groups' conceptualisations, but to understand one groups' cognitive and social processes.

Methods used along the corpus are rather varied, especially when it comes to data generation. More innovative and creative techniques such as photo diaries and movie scripts were employed and proved to stimulate participants' reflection and uncover fundamental aspects of their social representations.

2.6.Discussion and ways forward

The research analysed in this literature review aimed to understand and reflect on how SRT has been applied to the domain of ICT4D and to related studies, and whether SRT could be a suitable and informative theory within the field of ICT4D, where it is still rather unexplored. Particular attention was given to scholars' *aims* for choosing the theory, to the *themes* they tackled, to the *methods* they used, and to the *outcomes* they identified thanks to the contribution of the theory. The analysis on the domain of SR & ICT4D was particularly focused also on identifying possible ways forward for the research in the two fields. The reflection on the other two domains (SR & ICTs and SR & Dev) helped to shed light on the richness of the theory and onto possible research gaps.

The domain of SR to ICT4D is still much less studied. Yet, the application of SRT to ICT4D seems promising: the theory allows for consideration and inclusion of both local stakeholders' and funding agencies' drivers at the same time, thus operationalizing Heeks' theorised research-design gaps affecting so many ICT4D interventions (2003). Also, social representations are suitable for coping with unforeseen events most likely to happen in multidisciplinary, multicultural projects. Finally, SRs fit participatory research processes and are practical and design-oriented.

The analysis of the literature that applies SRs to ICTs and to International Development suggests other *ways in which the theory could be beneficial to the field of ICT4D*. SRT studies analysed aimed and proofed to be suitable to deliver longitudinal perspectives. Investigating changes over time in long-term research projects would be needed in ICT4D, where SRs research has been limited to case studies. Also, as shown by ICTs and Dev studies, SRs could be used not only to describe, but also to explain the influence of specific contexts on specific phenomena. Finally, studies on SRs could focus on: the dynamic of power into SRs construction; finding individuals' drivers for actions within best cases; identifying dissonant voices further than misalignment; and fostering participants' reflection on given phenomena.

The main themes tackled by the literature on SRs and ICT4D are the ones of access to ICTs, eGovernment and eParticipation, and education (ICT4E). The topic of telecentres and skills development to reach effective access and use of ICTs are the most studied through this theoretical lens. In the total extended corpus of literature including ICTs and development, similarly, education is the most addressed theme, as shown by the tag cloud reported in

Figure 2.8, and extends to the topics of distance and lifelong learning. Appropriation and meaning-making, a natural object of study of SRs, is the second most talked theme onto the total corpus, and it is often used to inform best practices and policies, and to evaluate interventions. Other much discussed subjects are eGovernment and eParticipation and their emancipative potential, and social issues related to health, gender, and stigmatisation. Again, SRs are considered a help in better understanding these phenomena and how to find drivers for action and social change.
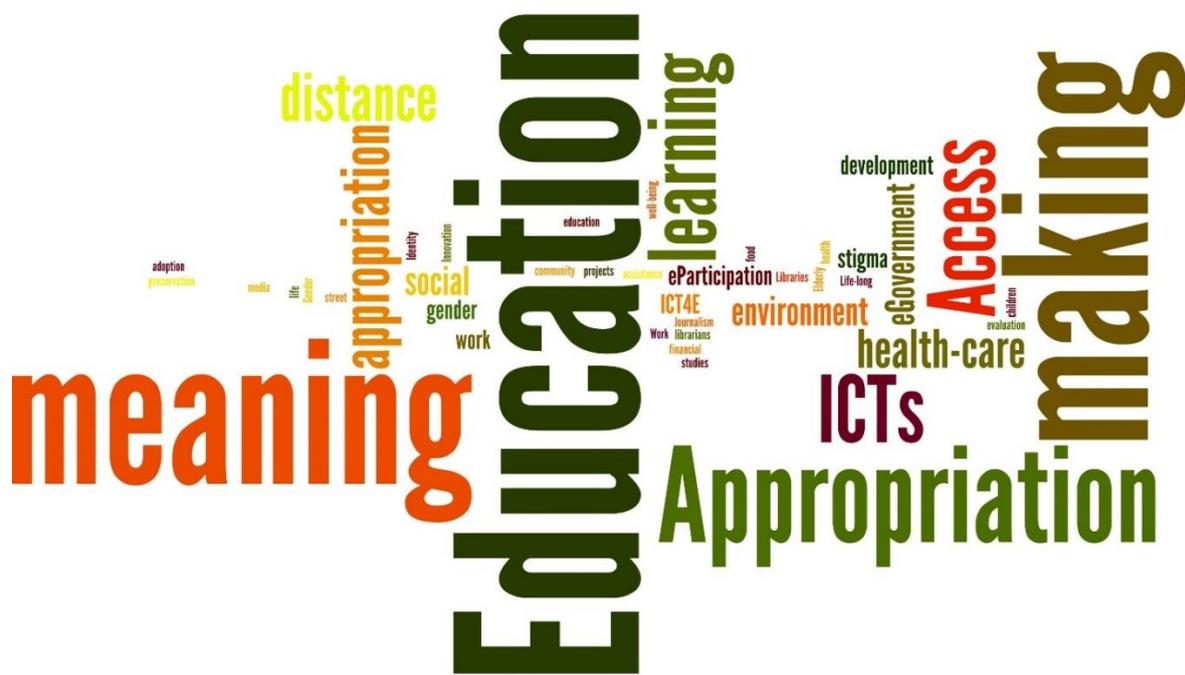
Figure 2.8: Tag cloud of the themes tackled in the whole corpus of studies analysed in the literature review.

Regarding the methodologies adopted, the literature shows how scholars tend to employ mainly mixed-methods approaches, as suggested by theorists of social representations (Farr, 1993; Moscovici, 1961; Sarrica, 2010). The domain of SR & ICT4D was found to have experimented with the least variety of methods, both of data generation, pretty much limited to interviews and observations, and data analysis, employing mainly content analysis. Exploring different methodologies, in line with social representations studies performed in other fields, could enrich reflection and shed light on different aspects of social representations, as affirmed by Stefania Meda (2011).

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This work will address the methodological scarcity found in the literature of SRs and ICT4D and contribute to its reflection by employing different methods of data collection and analysis. In the case of data collection, it will make use of photo-elicitation as a projective methodology, in a similar, but not identical, way as other studies in the domains of SRs & ICTs and SRs & Dev included in this literature. As employed here, the method of photo-elicitation aims mainly to foster reflection on participants, and grab from them concepts they would have not shared by other data generation means (see the article presented in section 4.3).

As far as data analysis is concerned, this work will make use of different methodologies, in order to triangulate data and compare outcomes. In particular, the analysis of the "lexical universes" of meaning (Reinert, 1983; 1990; 1993) performed through a computer-aided content analysis (Lancia, 2012) on word co-occurrences will be employed on the total corpus of interviews generated during the field work.

In this way, this work aims to offer a wider and sounder methodology for the domain of SRs and ICT4D and to confirm the suitability of the theory for the field of ICT4D.

3. Methodology

This chapter presents the research design adopted for this work, including the rationale for the methods for data generation and analysis chosen, and the research gaps it aims to fill. Special emphasis will be given to the method of photo-elicitation, for its novelty and research contributions for the field of ICT4D. Finally, the chapter will provide a description of the CMCs that participated in the study.

> The descriptions of the CMCs that were included in the research are adapted from the ones presented in the NewMinE Laboratory working paper "Community Multimedia Centres in Mozambique: A Map" (Rega, Cantoni, et al., 2013).

3.1. Methods for investigating Social Representations

Since their theorisation (Moscovici, 1961), the question of how to investigate social representations has been engaging scholars' speculation. Social representations are co-constructed evolving phenomena, continuously negotiated and alive within social groups, which makes them difficult to capture.

The study of social representations entailed scholars' intensive discussions on research methods, with no agreement on best practices (Wagner et al., 1999). Usually this included trialling innovative methodologies that typically have to combine "a variety of empirical approaches to tell the full story", thus grasp the complexity of social representations (Philogène, 2001, p. 39), at the same time considering contextual elements and diversity of voices.

The one thing scholars tend to agree upon is a preference towards employing mixed methods approaches (Farr, 1993; Moscovici, 1961) and methods that allow engaging with context specificities (Jodelet, 1991; Moscovici, 1961). Especially when dealing with "natural groups", researchers should expect to find several "modes", or forms, in which representations are negotiated and transmitted. Hence, a combination of methods for both qualitative and quantitative data gathering should be employed (Bauer & Gaskell, 1999). The ultimate goal for a multi-modal, multi-method approach is to triangulate from different data sources, mapping natural contradictions and consistencies of social representations, and having a more comprehensive picture of representations.

Outcomes from the literature review presented in this work (see chapter 2) also call for using a mixed methods approach. Particularly interesting to this respect is the case of the ICT4D project MELISSA (Rega & Van Zyl, 2011), where discrepancy between qualitative and quantitative data could be found, suggesting that further reflections are needed to understand potentialities and limits of the methodology eliciting social representations.

Chapter 2 has also stressed how other fields of research in social representations were more prone than ICT4D to use different methods for both data generation and data analysis. This thesis wants to tackle some of these issues by employing a novel methodology for the domain of social representations in ICT4D, which includes photo-elicitation and the analysis of the co-occurrences of words within interviews (see sections 3.4.2, 3.4.3 and 3.4.4, and the articles presented in sections 4.1 and 4.3).

The literature also stresses a general preference towards the investigation of social representations through language, in both its oral and written forms. Language is central to the process of constructing meanings (Hall, 1997). Language can also enable change (Markovà, 2003). The legacy of semiology (Saussure, 1916) in the theory of social representations is evident. However, as suggested by Voelklein and Howarth:

> *A discourse is not a representation, even if every representation is translated into a discourse. All that is image or concept does not entirely pass into language. (Voelklein & Howarth, 2005, p. 92)*

However, while representations may manifest themselves in language, they can be found also in photographs, drawings, movies, and other media (ibid.). Language is able to convey meanings because social groups share the same codes and communicate with one another. The same way, images can operate as codes and "signs" (Saussure, 1916), thus they can carry meanings. In this sense, images perform the same function as language does, and they are able to both aid in creating social representations and can be a "medium" for transmitting them (Bauer & Gaskell, 1999; Hall, 1997). Scholars have already engaged in different ways with photos, using them as a means to both elicit and understand social representations (de Rosa, 2001; Harcourt, 2006; Kessi, 2011; Mamali, 2006; Meda, 2011). Sections 3.4.2.1 and 3.4.2.2 will discuss the use of photos found in the literature for investigating social representations and will compare these uses to the method applied in this study.

3.2. Role of the researcher

This section will provide some considerations on the role of the researcher in this work, an issue that is often forgotten in psychological studies (Jovchelovitch, 2011), but is very important in the ICT4D domain.

Cognition and meaning-making are generated by communication and interaction (see chapter 2), and are at the basis of the process of co-creating social representations. When social representations are investigated by methods that require interaction between the researcher and the studied subjects, the researcher has a role in the process of communication and influences it. Jovchelovitch (2011) states:

> *Communication between researcher and subject is itself a variable that is likely to produce an effect. Indeed, a dialogical epistemology is generally assumed in interviewing situations, for there is a clear co-construction of perspectives that is integral to both clinicians and qualitative researchers. (Jovchelovitch, 2011, pp. 5-6)*

Even if the semiotic triangle of social representations (see figure 2.1) does not specifically foresee a role for the researcher, the researcher, albeit at a minimum level, is likely to be present in that interaction that makes possible constructing representations. On the other hand, the researcher is not part of the social group investigated and has to abstain from intervening. Bauer and Gaskell point out that:

> *As researchers, typically we are interested in studying milieus which are not our own. This calls for an attitude towards the object of study which could be best characterised as "live and let live", disinterested observation. In the course of the inquiry the researcher must step back from direct intervention in social affairs […] Abstaining from engagement is instrumental for increasing the sensitivity towards the world. (Bauer & Gaskell, 1999, p. 179)*

In this work, Bauer and Gaskell's recommendation is followed. Although I am aware of my position along the research process as both a researcher and a white woman in an African country, which created a distance between participants and myself and added complexity to the generation and interpretation of the data, I strived for "stepping back" in the phase of data generation and letting the data "talk" during their analysis. In particular, in the phase of data generation, I conducted interviews that were as long as possible, without urging for getting an answer or passing to the next question if people delayed in responding, rather leaving them the time to feel at ease and start talking. At the same time, I tried not to take anything for granted, and I constantly asked for the reasons why they were providing certain

answers. Finally, I did not stop interviewees when they started talking about things that were apparently not related to my questions: in some cases, they provided interesting insights and, after letting them speak about what was important to them, I channelled them back to my points. Finally, in the phase of data analysis, I tried to keep my coding as "grounded" on the interviews as possible, without superimposing previous models to my coding. Only a part of the analysis of the images produced uses a pre-determined framework; however, this framework is combined to a thematic content-analysis that builds, again, from the interviews, and it is used only to have a general panorama on the data (see section 4.3).

3.3. Research questions and research gaps

This work aims to investigate social representations of Mozambican CMCs as perceived and conveyed by different local stakeholders, namely: (i) initiating agencies (i.e., UNESCO and the Ministry of Science and Technology of Mozambique); (ii) members of the staff working at the venues; (iii) users of both the community radio and the telecentre components of the venues, or "users of the whole CMC" (U-CMC); (iv) users of the community radio only (U-RC); and (v) non-users.

A further aim is to validate whether the theory of social representations is an adequate theoretical framework for including cultural and contextual perspectives to ICT4D projects (Tedre, Sutinen, Kähkönen, & Kommers, 2006), thus operationalizing the "design-reality gap" theorised in the literature (Heeks, 2003). In other words, if social representations are suitable for *listening* to the context and include it in ICT4D research and practices, instead of just *talking* to it (Brunello, 2010).

The few studies that adopted social representations in ICT4D show how the theory allows for consideration and inclusion of different stakeholders' perspectives, local voices, contextual elements, and ICTs-related phenomena (see chapter 2). The theory seems to be suitable for ICT4D studies. Yet, ICT4D scholars who employed SRT to date have used a quite narrow spectrum of methods of investigation.

Finally, the topic of public access in Mozambique has not received enough international academic attention (see section 1.3), despite huge investments being made by the government of the country and international agencies. Outcomes from this study aim to contribute to a better understanding of the phenomenon, and are intended to inform not only

the academic community, but also governmental institutions, international development agencies, and practitioners.

This study, then, aims to answer to three main research questions:

1. What are the social representations of CMCs in Mozambique according to the different stakeholders and social groups involved in their implementation and ray of action?
2. Is Social Representations Theory a suitable theoretical paradigm to be employed for advancements in the domain of ICT4D?
3. Is the research strategy chosen within this study suitable in order to assess Social Representations in ICT4D?

This study intends to contribute to the literature about ICT4D at three levels:

- *Theoretical* level: understanding whether SRT could be an appropriate, informative, and operational theory within the domain of ICT4D;
- *Methodological* level: adopting methods of data generation and data analysis never previously used within the domain of SR applied to ICT4D;
- *Pragmatic* level: offering relevant insights to policy makers and practitioners, as well as to the academic community.

3.4. Research Design

In order to answer to the three main research questions presented in the previous section, this research adopts a mixed methods approach, by combining different methods for data generation and analysis. Mixed methods research was chosen to provide more holistic evidence than either quantitative or qualitative research alone (Creswell & Clark, 2011), to generalise outcomes for the whole country, and because it seems particularly suitable for the studies of social representations, as stated by Farr (1993) and Moscovici (1961).

The majority of studies using SRT in ICT4D also employed mixed method approaches, but varied very little in the techniques they chose (see Chapter 2). This research built on both semi-structured interviews and on photo-elicitation, a technique that was not previously adopted in the field and that is unexplored in the whole domain of ICT4D. To

introduce it, special emphasis is given in the next sections. Data analysis included different types of content analysis and co-occurrences analysis based on text mining techniques.

A caveat: even if the data generated for this research was largely qualitative, I consider the methodology I employed as "mixed methods", according to what proposed by Creswell and Clark (2011). The authors make a difference between a definition of "methods" and a definition of "methodology", and define as a "mixed methods methodology" one that employ both qualitative and quantitative methods:

> *Consider a study in which only one type of data is collected but both types of data analysis are used. For example, a researcher would collect only qualitative data but would analyze the data both qualitatively (developing themes) and quantitatively (counting words or rating responses on predetermined scales). A more typical content analysis study would be one in which the researcher collects only qualitative data and transforms it into quantitative data by counting the number of codes or themes. Are either of these examples mixed methods research? [...] Under a "methods" definition in our definition, the study would not be mixed methods because both qualitative and quantitative data are not being collected. Under a "methodological" definition—combining at any stage in the process of research—the study would be considered mixed methods because both qualitative and quantitative data analysis is going on. The more open methodological stance would consider it mixed methods. (ibid., p.12)*

The following sections will present the CMCs participating into this study (3.4.1), situate photo-elicitation in the literature (section 3.4.2), and explain how the data for this work was generated and analysed (3.4.3 and 3.4.4).

3.4.1. CMCs participating to the study

Ten Mozambican CMCs were chosen to participate in this study. When the field work of this study was conducted (March and April 2011), the total number of CMCs in Mozambique was 34. In March 2013, when I was able to update the list of existing CMCs for the last time, there were 43 CMCs in the country. The map in figure 3.1 shows the location of all the CMCs in the country (blue pins) updated to March 2013. The red pins show the CMCs that participated to this study. In the articles included in section 4.1 a map of the CMCs existing at the beginning of the study is shown (see figure 4.2).

CMCs selected for the study and divided by area of the country are:

- *Area South*: Xinavane (province of Maputo), Chokwe (province of Gaza), Morrumbene (province of Inhambane);
- *Area Centre*: Dondo (province of Sofala), Sussundenga (province of Manica), Chitima (province of Tete), Quelimane (province of Zambezia);
- *Area North*: Chiure (province of Cabo Delgado), Ilha de Moçambique (province of Nampula), Cuamba (province of Niassa).

The criteria for the selection of the CMCs that took part to the project were: location (one per province of the country, urban/rural), ownership typology, year of foundation, and variety of services offered. The goal of the selection was to find 10 CMCs that could be as illustrative as possible of the situation of CMCs in the country. A more detailed explanation of selection criteria is found in the articles presented in sections 4.1, 4.2, and 4.3.
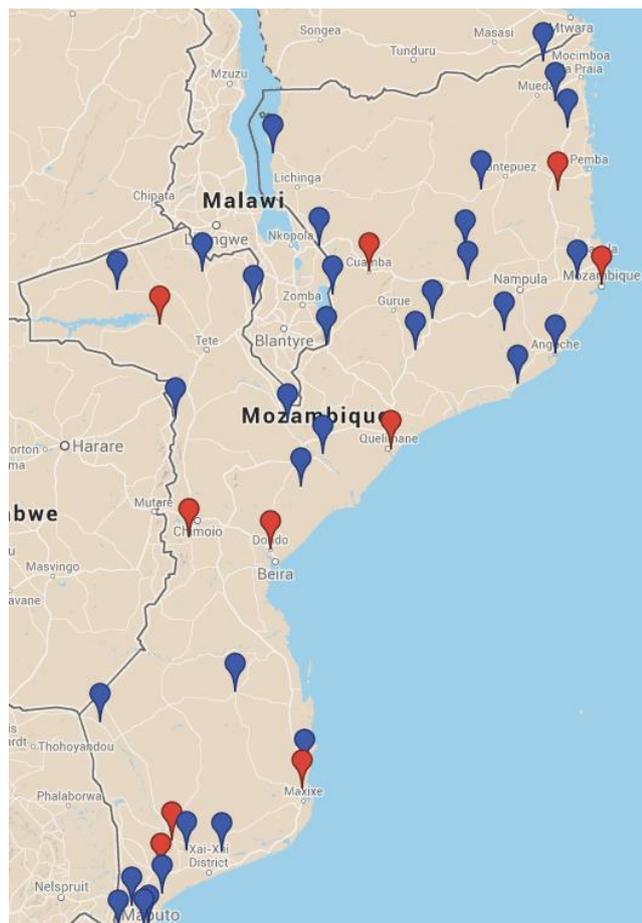
Figure 3.3: Map of CMCs in Mozambique (up to March 2013).
Red pins show the CMCs participating to this study.

In the following sections, an overview on the 10 CMCs participating in this study is given. Each CMC is described according to the Online Communication Model (OCM), originally created to analyse online communication (Cantoni & Tardini, 2006; Inversini & Cantoni, 2014). The model was already adapted and proved to be suitable for describing telecentres (Rega, 2010b), and is consequently considered to fit well for CMCs. As stated by Rega, telecentres (and CMCs) can be seen as driven by four pillars, two of which are connected to people and two to objects:

1. *A cluster of services: e.g. training activities, photocopying service, telephone service, internet surfing, healthcare information service, etc.*
2. *A collection of technical instruments that make the services accessible: e.g. scanners, computers, servers, telephones, etc.*
3. *A group of people who manage the telecentre: e.g. the director, the board, the founding organization, the trainers, etc.*
4. *A group of people who access the centre: users. (Rega, 2010b, p.27)*

A fifth element, the local and national *context* in which the telecentre is set, is relevant to complete the picture. A more detailed description of the OCM model adapted to telecentres is given in the article presented in section 4.3.

Two caveats: Regarding "people managing" (pillar three of the OCM), CMCs usually distinguish members of the staff in two groups: proper staff members and volunteers. The main difference between the two groups is that staff members are people working in the CMC on a permanent basis, while volunteers have a higher level of turnover, as they are mainly working there to learn and offer some voluntary work to their communities. Usually, staff members receive a salary or an incentive for their work, while volunteers are not paid. In some cases, however, volunteers receive an incentive, too. Furthermore, each CMC has a general coordinator and, in some cases, also two people serving as coordinators for the radio and the telecentre respectively. Human resources models of CMCs vary considerably, so that in some cases, the two groups of volunteers and staff members are perfectly overlapping, and staff members define themselves as volunteers. In the descriptions below, I tried to specify how many staff members and volunteers were there for each CMC at the moment of the field work. In the rest of this work, people managing the CMC will referred to as simply "staff", regardless of their status as staff member or volunteer.

Finally, the following descriptions are based on the ones included in the NewMinE working paper "Community Multimedia Centres in Mozambique: a map" (Rega et al., 2011),

and date back to March-April 2011. It is very likely that the situation of these CMCs and the town they are located can have changed.

3.4.1.1.   *CMC of Xinavane, province of Maputo (South of Mozambique)*

Context: Xinavane is located about 80 kilometres north of Maputo in the district of Manhiça. The district has approximately 157,642 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007). Xinavane is famous for its Sugar Factory (Tongaat Hulett Sugar). The factory is an important partner for the CMC: some of its workers benefit from the CMC services. In exchange, the CMC receives electricity for free. Apart from the Community Radio of the CMC, Xinavane district receives Radio Moçambique. Another local radio broadcasts in town, too: Rádio Gwevhane.

Figure 3.4: The Community Multimedia Centre of Xinavane

Pillar 1 – Services: The Telecentre offers basic computer training (Word, Excel, PowerPoint), photocopies, printings, document typing. The Community Radio transmits in Portuguese and Xichangana, it offers public information service, announcements, and lost and

found services. It works from morning to night. Other: At the entrance of the venue there is a TV transmitting news, sport programs, and soap operas from the national channels.

Pillar 2 – Facilities and technological instruments: The CMC of Xinavane is located in the enclosure of a school (primary and secondary). The CMC has four working computers in the training room, one at the secretary's office, one in the radio room, and one for the coordinator. Multimedia CDs as health encyclopaedias, atlas, and vocabulary are available for consultation.

Pillar 3 – People managing and working at the venue: The majority of the 20 CMC staff members were recruited recently because previous volunteers switched to Rádio Comunitária Gwevhane, causing some problems at the CMC. The CMC was founded in 2005 and entrusted to the AJUCOM – Associação Juvenil para o Desenvolvimento da Comunidade (Youth Association for the Development of the Community). All staff members declared to be volunteers.

Pillar 4 – Users: Most of the users are young students and teachers from the school. Also workers from the Sugar Factory use the centre.

3.4.1.2.   CMC of Chokwe, province of Gaza (South of Mozambique)

Context: Chokwe is a rural town and capital of the district with the same name. It is located about 230 kilometres north of Maputo, and its population is approximately 183,531 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007). Chokwe lies in the farming zone on the southern side of the Limpopo River, sadly famous for its frequent floods. Migration is a regional issue: most of the men from the district tend to leave the city in quest for better opportunities to sustain their families at home.

Pillar 1 – Services: The telecentre offers basic computer training (Word, Excel, PowerPoint). Other services such as printouts, photocopies, fax, document typing, and consultation of CD-Roms are available. With its ray, the community radio covers one third of the city and works from morning to night. A program designed for and managed by children and young people is very popular. It transmits in Portuguese and Xichangana.

Pillar 2 – Facilities and technological instruments: The CMC has six computers: three desktop computers and one laptop are in the computer training room, one desktop computer is in the radio station, and one in the front office, used by the secretary.

Pillar 3 – People managing and working at the venue: The Associação Rural de Ajuda Mutua (Rural Association of Mutual Help) has been managing the CMC since its

inauguration in 2005. The association, however, is based in another town, at a driving distance of 40 minutes. The CMC has recently shifted management: presently, it is managed by one coordinator directly involved in the radio and telecentre, one secretary, one security guard, and four volunteers for radio and telecentre. All staff members declared to be volunteers.

Pillar 4 – Users: users are mostly students and teenagers. Adults visit on random basis, mainly to have documents typed or to make photocopies.

Figure 3.5: The Community Multimedia Centre of Chokwe

3.4.1.3. CMC of Morrumbene, province of Inhambane (South of Mozambique)

Context: Morrumbene is a town in the district of the Inhambane Province, approximately 450 kilometres north of Maputo. Its population is approximately 124,436 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007), and it is located on the National Road N1. Its main sources of income are agriculture, fishing, and tourism.

Figure 3.6: The Community Multimedia Centre of Morrumbene

Pillar 1 – Services: The telecentre offers basic computer training (Word, Excel, PowerPoint, Access, and internet). Multimedia CD-Roms as health encyclopaedias, atlas, and vocabulary are also available. The community radio is also new and used for commercial and personal announcements, debates, lost and found services, and youth programs. The radio transmits in Portuguese, Xitswa, and Bitonga. Other: the CMC has also a big space used for community events and it was about to start a community cinema.

Pillar 2 – Facilities and technological instruments: The CMC has 16 new computers, 12 of which are in the computer training room, two are available for browsing the internet and finding multimedia information, one is in the radio station, and one in the coordinator's office.

Pillar 3 – People managing and working at the venue: The CMC was established at the end of 2010 by the Ministry of Science and Technology (MCT), so it had started operating only three months before the time of the research. The CMC is entrusted to the Associação Juvenil "a Chama" (Youth Association "The Flame"), and it is part of the "new model" of CMCs in the country (Ministerio das Ciências e Tecnologías de Moçambique,

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2008). Staff members include 14 volunteers. The volunteers and the coordinator are all members of the Associação Juvenil a Chama.

Pillar 4 – Users: Users are mostly students and government officers.

3.4.1.4.   CMC of Dondo, province of Sofala (Centre of Mozambique)

Context: Dondo has a population of approximately 77,532 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007), and is a fast-growing town located only 35 kilometres from the city of Beira, the capital of the region. The main income source of the district is agriculture.

Pillar 1 – Services: At the time of our visit, the telecentre was about to start a basic ICT training course. It also offered photocopies and typing service. The community radio provides information services, necrologies, announcements, it rents antenna time, and it is directly involved in acquiring and facilitating information to provincial and National radios. The radio transmits in Portuguese, Cisena, and Ndau.

Figure 3.7: The Community Multimedia Centre of Dondo

Pillar 2 – Facilities and technological instruments: The CMC had five working computers for the public.

Pillar 3 – People managing and working at the venue: The CMC of Dondo was founded in 2004 and is being managed by the Associação dos Serviços Comunitários de Sofala (Association of the Community Services of Sofala). The CMC has 30 volunteers.

Pillar 4 – Users: Users are mostly students, who make use of the photocopy service at the CMC: one student representative for each class at Escola Secundaria de Macaroque is responsible to make copies for their classmates.

3.4.1.5. CMC of Sussundenga, province of Manica (Centre of Mozambique)

Context: Sussudenga is located 42 kilometres from Chimoio, the capital of the province: it has a population of approximately 128,866 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007) and its main income source is agriculture.

Pillar 1 – Services: The telecentre provides basic computer training (Word, Excel, PowerPoint), photocopies, fax, and booklets for students. The community radio broadcasts in Portuguese, Chiute, and Chimanyika from morning to late night. The radio provides public information services, announcements, rent of antenna time, and social issues programs. Furthermore, it also broadcasts the National Radio Station. Other services include receiving and retransmitting the signal of the National Television Channel to the town.

Figure 3.8: The Community Multimedia Centre of Sussundenga

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Pillar 2 – Facilities and technological instruments: The CMC has eight computers, six of which are used for basic computer training, one is used in the radio station, and one is in the manager's office.

Pillar 3 – People managing and working at the venue: The CMC of Sussudenga was founded in 2001 and its management entrusted to the National Institute of Social Communication (INCS). There are six staff members, employed by the INCS. Thirty volunteers also work in the venue.

Pillar 4 – Users: A different range of people visit the CMC due to the heterogeneity of the services provided.

3.4.1.6.   CMC of Chitima, province of Tete (Centre of Mozambique)

Context: Chitima is a town located on the side of the river Zambezi, in the district of Cahora Bassa, one-hour drive from the town of Songo, where the hydroelectric of the dam of Cahora Bassa lake is located. The hydroelectric of Cahora Bassa is Africa's fourth-largest artificial lake and one of the most important producers of electricity in the whole Austral Africa. The district has a population of approximately 86,641 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007) and its major economic activities are production of electricity and agriculture. Even still, the infrastructure and distribution of electricity in the rural areas of the district is scarce and inadequate.

Pillar 1 – Services: Photocopy services are provided in the telecentre during the intervals of the radio broadcasting, while when the radio is on air the electricity in the venue is not sufficient for both services. The community radio works in intervals of two hours, and it broadcasts in Portuguese and Cinyungwe; the radio covers only the Chitima valley. The radio transmits in Portuguese and Cinyungwe. The CMC also provides clean water for the community by means of a well located in front of its entrance.

Pillar 2 – Facilities and technological instruments: At the time of our visit, the telecentre had four computers donated by UNESCO a couple of months before, which were still not in use. The venue had no other working computers for the public when the project started.

Pillar 3 – People managing and working at the venue: The CMC has 13 volunteers working at the radio station.

Pillar 4 – Users: Users are mostly students from the community asking for photocopies.

Figure 3.9: The Community Multimedia Centre of Chitima

CMC of Quelimane, province of Zambezia (Centre of Mozambique)

Context: Quelimane is the administrative capital province and the fourth largest city in Mozambique. It lays 25 kilometres from the mouth of the River dos Bons Sinais (River of the Good Signs). Quelimane has a population of 192,876 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007). The area is extremely humid, infested by malaria-carrying mosquitos, and is extremely prone to floods during rainy season.

Pillar 1 – Services: The telecentre offers computer training (Word, Excel and PowerPoint). The telecentre does not sell photocopies as there are many other shops around which can offer that service. The community radio also offers training in radio journalism, interview techniques, and report writing. The radio transmits in Portuguese, Elomwe, and Chuabo.

Pillar 2 – Facilities and technological instruments: The CMC of Quelimane is located on the first floor of a Primary School. Two classrooms of the school are used for the radio and telecentre. The CMC has eight computers, seven of which are allocated to training, and one for the radio. Three computers were just donated from UNESCO, while the other five are 13 years' old, but very well-maintained and still working for the purpose of the training.

Figure 3.10: The Community Multimedia Centre of Quelimane

Pillar 3 – People managing and working at the venue: In 1998, the Catholic Church founded the community radio, thanks to the will of one of the nuns working in the area. In 2006, a telecentre was established in cooperation with UNESCO in the same premises and its management was entrusted to the local Cathedral. The place has become a CMC. The CMC has two coordinators (both of them are Catholic nuns) and 12 volunteers.

Pillar 4 – Users: Mostly young people who graduated from high school, study for university placement, and attend computer courses at the CMC.

3.4.1.8.   CMC of Chiure, province of Cabo Delgado (North of Mozambique)

Context: Chiure is a district of the Cabo Delgado Province, in northern Mozambique, and it has a population of 230,044 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007). The town is located along the road that comes from Pemba, capital of the province. The town is known for its rich amount of mineral resources.

Pillar 1 – Services: The telecentre offers a basic computer course during the evenings (Word, Excel), PowerPoint is not taught because the staff is not able to use the program yet. Computers are also used by users to type documents; if necessary, the staff supports people

with no additional fees. Photocopies and printing facilities are also offered. The community radio of the CMC transmits in Portuguese and Emakhuwa: it provides announcements, necrologies, advertisements, and it rents time of antenna. Other: The CMC also hosts the antenna for the national television.

Pillar 2 – Facilities and technological instruments: The CMC has six fully working computers for the public, plus one computer in the radio studio. The telecentre was moving from a governmental building to a new place that was about to be built by the staff members themselves. In the meantime, the telecentre was hosted in the same building of the local police.

Figure 3.11: The Community Multimedia Centre of Chiure

Pillar 3 – People managing and working at the venue: The CMC has nine permanent staff members, who are employed by the National Institute of Social Communication (INCS). Nineteen volunteers, mostly teenagers and young people, are also working at the place.

Pillar 4 – Users: Farmers, students, and government officers are the groups that mostly use the telecentre part of the CMC.

3.4.1.9. CMC of Ilha de Moçambique, province of Nampula (North of Mozambique)

Context: The Island of Mozambique is located in northern Mozambique, between the Mozambique Channel and Mossuril Bay, 180 kilometres from Nampula, the capital of the province, and along the national road EN8. It has a population of around 14,000 people (Instituto Nacional de Estatistica de Moçambique (INE), 2007) and is part of the Nampula Province. The island is a UNESCO Cultural World Heritage Site, and it is quite known by international tourists. The island is rich in history, as it was the former capital of Mozambique. It attracts international NGOs and associations, as well as people who want to open up activities in tourism (especially restaurants). It is well provided for with good accommodation, transport means to Nampula (private taxis and small public buses), and eateries. A number of associations are based in the island and many of them offer basic computer courses to the community: the Millennium Village, both on land and on the island; "Projecto Oceano", targeting young people; SAMANI, an Italian NGO; and Telecommunications of Mozambique company (TDM). An association of local entrepreneurs in tourism was also founded by local people, mainly women, who are also very active in organising events to promote the rich culture of the island.

Pillar 1 – Services: The telecentre offers photocopies, typing, scanner, and access to multimedia content. The Community Radio transmits in Portuguese and Emakhuwa in intervals of two hours, every other two hours.

Pillar 2 – Facilities and technological instruments: During the fieldwork, no working computers were available: the coordinator was using his own laptop to type documents and sometimes to write e-mails for the community, burning CDs, doing some graphic works, and editing videos and pictures. According to the coordinator, the CMC has been without computers for community usage for two years. The CMC telephone line has been cut because they could not afford to pay the bill, so fax facilities are not there anymore. The CMC has one working computer in the radio station. UNESCO donated three more computers, which were about to be installed, one of which will be placed at community disposal.

Figure 3.12: The Community Multimedia Centre of Ilha de Moçambique

Pillar 3 – People managing and working at the venue: The CMC was founded in 2007 and it is managed by the the local association Associação dos Amigos da Ilha de Moçambique (Friends of the Island of Mozambique). The CMC has 16 volunteers working for the radio.

Pillar 4 – Users: Users are mainly students or people in need of photocopies.

3.4.1.10.   CMC of Cuamba, province of Niassa (North of Mozambique)

Context: Cuamba is a municipality situated at the northwest of Mount Namuli, 300 kilometres away from the city of Lichinga, the capital of the province. It lies on the junction of the railway line from Nacala Port (the main commercial harbour in the north of Mozambique) and the city of Nampula (the biggest city in the north of the country) on the one side, and the branch line to Lichinga, the capital of the province on the other. This makes of the city a central commercial node and an important transit and pitstop for people moving from Malawi, and the provinces of Niassa and Nampula. The town has 56,801 inhabitants (Instituto Nacional de Estatistica de Moçambique (INE), 2007) and is home to the School of Agriculture of the Catholic University of Mozambique. Beyond the CMC, two telecentres are

in town, belonging to the National Telecommunication Company of Mozambique (TDM) and to the nearby Catholic Parrish.

Figure 3.13: The Community Multimedia Centre of Cuamba

Pillar 1 – Services: The telecentre offers basic computer courses (Word, Excel, PowerPoint, and internet). Other services are photocopying, printing, bookbinding, and faxing. The community radio transmits in Emakhuwa, Cinyanja, and Portuguese, from morning to night. It also offers radio journalism training for its staff members. The CMC hosts also the signal for the national television and radio, retransmitting it to the whole town. The CMC also offers language courses as a way to financially sustain the community radio.

Pillar 2 – Facilities and technological instruments: The CMC has five computers, one in the reception, one in the coordinator's office, two in the training room, and one in the radio station. One computer is connected to the internet: the staff explained that this is to avoid students lose their focus during the courses. The CMC received some equipment from UNESCO and CAICC, but they had not started to install it, yet.

Pillar 3 – People managing and working at the venue: The CMC was founded in 2006 and the Associação da Rádio Comunitária de Cuamba (Association of the Community Radio of Cuamba) was entrusted its management. The president of the association is a Swedish woman. The rest of the people working at the CMCs (31) are all Mozambicans. Staff members (seven) gain on the basis of the revenue of the whole centre.

Pillar 4 – Users: Users of the venue are mostly students and teachers from the local and surrounding towns.

3.4.1.11.   *Summary of the venues participating to the study*

The presence of a community radio and a telecentre offering computer training and internet access is considered crucial in the definition of the model of CMCs (United Nations Organization for Education Science and Culture, 2004). Based on the services they offered at the time of the field work, we can distinguish three main kinds of CMCs among the ones participating to this study:

1. A group of CMCs that do not offer direct access to computers and the internet to the public. Their community radio has a computer, so that members of the staff can retrieve information and transmit it to the community. These CMCs can be defined as "*Connected Community Radios*". There are two venues in this group: Chitima, and Ilha de Moçambique;

2. A group of CMCs that have computers at the disposal of the public, which are usually used for computer training, but do not offer access to the internet as a service for the public. These CMCs can be defined as "*Offline-Access CMCs*". There are six venues in this group: Chiure, Chokwe, Dondo, Quelimane, Sussundenga, and Xinavane;

3. A group of CMCs that have computers at the disposal of the public, and offer them both computer training and access to the internet. There are two venues in this group: Morrumbene and Cuamba. They were defined as "*Full-Access CMCs*".

Tables 3.1 shows the heterogeneity of the CMCs comprised in the study based on the presence of community radio, computer training, and internet access. Table 3.2 reports on CMCs' radio signal coverage, on the number of computers available for the public, and number of staff members.

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Table 3.6: Typology of CMCs, grouped based on the services they offer. Adapted from Vannini, Aguirre, Rega, & Cantoni (2013).

	Radio	Computer access and training	Internet for the public	Venues
Connected Community Radio	Y			Chitima Ilha de Moçambique
Offline-Access CMC	Y	Y		Chiure Chokwe Dondo Quelimane Sussundenga Xinavane
Full-Access CMC	Y	Y	Y	Morrumbene Cuamba

Table 3.2: Summary of CMCs participating to the study. Adapted from Rega et al. (2011).

Region	Town/City	Radio Coverage (KM)	# of computers for the public	# of Staff
South	**Xinavane**	100	5	20
	Chokwe	60	5	7
	Morrumbene	100	14	14
Centre	**Dondo**	35	5	30
	Sussundenga	60	6	36
	Chitima	10	0	13
	Quelimane	60	7	14
North	**Chiure**	100	6	28
	Ilha de Moçambique	120	0	17
	Cuamba	100	3	31

3.4.2. Photo-elicitation

Photo-elicitation is a projective interview technique (Branthwaite, 2002; Porr, Mayan, Graffigna, Wall, & Vieira, 2011) in which photographs are combined as integral components of research interviews (Harper, 2002). The method has been used extensively in psychological, social, and ethnographic research (e.g., the studies by Collier, 1967; Harcourt, 2006; Rorschach, 1998; Rose, 2007). Collier's research on preliterate Navajo peoples in New Mexico (Collier, 1967), which brings examples also from research on other indigenous populations in North, Central, and South America, is considered one of the first reference points for studies based on visual methods.

According to Collier, photos are a projective method, which allows for both *enhancing understanding* on a topic and *gathering more and different data* compared to methods that rely only on observation and oral communication (Collier, 1967). Rose (2007) defines photo-elicitation as a supporting method, implying that photos are used as further evidence to answer given research questions. Reflecting on visual methods, Collier points out that photography has the "ability to present interrelated wholes" (Collier, 1967, p. 58) and outcomes from photo-related interviews lead the researcher to a deeper understanding, "a blend of precise reading of exact graphic content and projected attitudes" (ibid., p. 61). Collier adds that "it is probably more difficult to lie about a photograph than to lie in answering to a verbal question" (ibid., p. 66).

Scholars widely agree on considering photo-elicitation as a means to *achieve results not easily achievable* by using methods relying only on oral and written data. This is particularly valuable when the researcher is from a different culture than the one they investigate, as in the case presented in this research, and as in some examples from studies performed in developing countries. Working in Kampala, Uganda, Young and Barrett (2001) asked street children to create photo-diaries and present their daily activities. For their study, pictures "worked exceptionally well as a tool for discussion" and revealed more than interviews alone would have done (ibid. p. 147). The same way, Blinn and Harrist state that "without the photos to use as basis for the interviews, the study [about women re-entering college] would not have provided the kind of rich and intimate data that it did" (Blinn & Harrist, 1991, p. 188). The study of Bignante (2010) on the use of natural resources in a Maasai village in northern Tanzania also confirms that images can provide additional validity and depth to other more conventional research methods, thus constituting a useful tool to triangulate between different information sources.

Another distinctive feature of photo-elicitation is the fact that the method is a way to *empower interviewees* who, by taking photos, relate to the world in a more aware and informed way. Collier himself had identified this characteristic, by stating that through photography the role of the "informant" can be the one of "the expert guide, leading the fieldworker through the content of the pictures" (Collier, 1967, p. 13). Dodman presents a similar view in his study on the relation between young people and their urban environment in Kingston, Jamaica (Dodman, 2003).

Empowering interviewees has four further implications: first, participants develop a *higher enthusiasm* toward the research, as underlined by Dodman (2003) and Young & Barrett (2001). Second, participants are prompted to *reflect* on the subject: in their study on access to education in Zambia and Tanzania, Miles and Kaplan (2005) reported how the use of images was one of the most promising methods to help participants to reflect on their own experiences. They also suggest that the method can be useful to foster reflection in action-research studies, particularly when they take place in oral cultures, where the mediation of written text can inhibit research participants. Also, Bignante (2010) highlights that images are able to involve interviewees more actively and consciously in the research, by empowering and supporting their ability to express themselves.

Third, the technique is *participatory* (Collier, 1967; Dodman, 2003; Young & Barrett, 2001)**,** and "seeks to renegotiate the power relations between the researcher and the subject" (Dodman, 2003, p. 293). Fourth, empowerment through the use of visual methods is connected to a *renegotiation of the roles* of the interviewer and the interviewee. 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. Bignante (2010) states that the technique allows challenging researchers' mind-sets to seek pre-conceived replies. According to Young and Barrett (2001), visual "action" activities (mental maps, drawings, photo diaries) were fun, child-centred, and gave the street children involved a large measure of ownership of the exercise. Moreover:

> *They demonstrated to be a very good way of including children of all ages and both genders into the research process without discriminating between those with different abilities, confidence levels and educational attainments. (Young & Barrett, 2001, p. 151)*

Young and Barrett also add that:

> *The photographs taken by the children were a good method for eliciting oral detail without subjecting the children to the authoritarian approach that previous interviews techniques have been associated with. This provided the researcher with valuable data that would not have been possible by visual or oral methods used independently. These visual methods successfully allowed children to take control of the actual research process without the inhibitory factor of researcher presence. This is particularly important when the researcher is an outsider to the population under study. (ibid.)*

This makes photo-elicitation a promising tool whenever dynamics of power can intrude into the data collection, as it happens in cases of *donor-beneficiary relationships* (Dodman, 2003) or to bridge two culturally distinct worlds, as when the western researcher is involved in non-western realities, as in Samuel's (2004) research about Buddhist monks in Sri Lanka.

According to Dodman (2003), the approach is not only participatory in generating data, but also in receiving feedbacks from participants and returning data to them. Again, Collier individuated the same opportunity:

> *The feedback opportunity of photography, the only kind of ethnographic note taking that can reasonably be returned to the native, provides a situation which often gratifies and feeds the ego enthusiasm of informants to still further involvement in the study (Collier, 1967, p. 13)*

Two main approaches characterise the use of photo-elicitation:

1. Photos are chosen by the researcher and showed to the interviewees;
2. Photos are taken by interviewees themselves.

For this study, the second option was considered to be the optimal technique to elicit social representations of CMCs. The study, in fact, aimed to involve participants and give them a voice in the research. This method has been referred to with different names in different disciplines. In the geographic study of Bignante (2010) it is called "native image making technique". "Native photography" is also the name given by the sociologists Blinn and Harrist (1991). Ethnographers usually define it as "auto-driven" (Clark-Ibáñez, 2004; Samuels, 2004) or "participant-driven" (Rose, 2007) photo-elicitation. In this study, I will refer to it as "participant-driven" photo-elicitation, to underline its participatory purposes.

3.4.2.1. *Photo-elicitation and social representations*

The use of visual methodologies within the study of social representations is not new, although most of the studies in this field follow the first of the two approaches explained above, where the researcher himself selects the photos to present during the interview (Harcourt, 2006; Sen & Wagner, 2005). Theoretically, the use of images to investigate social representations appears to be particularly fitting: in her comment on Sen's and Wagner's study (2005), Cătălin Mamali supports the "epistemic valence" of visual materials to investigate "social representations produced by the insiders of any community that could

complement their predominant verbal approach" (Mamali, 2006, p. 1). Mamali argues that images would come before words in the negotiation of meanings within communities:

> *Both phylogenetically and ontogenetically visual images (figures, icons, pictures, map-like structures) either of real objects or illusionary, even impossible objects, are prior to either oral or written communication through words. Images come first, words are coming after. (Mamali, 2006, p. 1)*

Then, she states that visual images and stimuli are used naturally both by individuals and by communities and have an important function in disseminating innovations across social borders and in encouraging social learning through imitation.

> *Visual images [...] are parts of the socialization and enculturation processes and as such are integrative and central components of social representations (Mamali, 2006, p. 2)*

Similarly to other studies using photo-elicitation, Mamali argues that the use of photos and images "provides valuable information on social representations that is not accessible by other means" (ibid., p. 6). Images can recall significant events (which she calls "evocative potential"), produce association (or have a "projective function"), and are able to produce social changes. Mamali finds it strange that most studies on social representations carried out across cultures have not employed visual stimuli, and are limited to verbal material. She adds that this is probably due to the fact that visual material can be more difficult to select (or produce), and analyse. She concludes that significant outcomes of Sen's and Wagner's research emphasize the value of participative research within the field of social representations:

> *If we take into account [...] Moscovici's idea that social representations are not just copies of social reality but they can be factors of social change, it follows that it might be useful to develop procedures able to offer the insiders the means to express their own pictures, images, visual representations (Mamali, 2006, p. 7)*

As already mentioned, in most of the studies employing photo-elicitation to explore social representations photos are chosen by the researcher and showed to the interviewees. In this research, instead, photos were taken by participants on the basis of instructions given by the researchers. Social representations studies employing photographic material in this way are not many, but seem to have achieved interesting insights as a result of the use of photos.

One example is given by the work of Meda (2011) with street children in Nairobi, Kenya, with which we now move to the field of international development. Just as the study by Young and Barrett (2001), but using the framework of social representations, Meda makes use of photo-diaries to access to places and information she would not be allowed to otherwise: children were encouraged to produce their own photo materials, which became source of discussion with the researcher, and complemented other ethnographic and oral data gathered by the researcher. Meda's rationale for the choice of this technique goes in the direction of what has been argued above: visual methods allow subjects' participation and reflexivity, permit to re-create their daily practices, thus giving more details to the researcher, and are suitable for working with children and marginalised communities. In Meda's study, street children experience a triple marginalisation, due to their status as non-adults, their exclusion from some spaces of the city, and their social rejection. Meda's study shows, too, that even in those cases where their control over oral expression is poor, photos allow for picking children's perspective, and they are entertaining enough to reduce the risk of drop-out. Meda also agrees that the cultural gap between the researcher and children is reduced by employing this method, which finds a common basis to start the conversation from. Finally, she suggests that entrusting cameras to children made them feeling responsible and worth the researcher's trust, which positively influenced the relationship between them.

Also Kessi's study (2011) deals with the use of photo-stories with young people, this time in Tanzania and South Africa. Kessi aims at identifying narratives and contradictions in young people's representations of self and their community as marginalised social groups. Contradictions appeared to be most visible when comparing the data gathered from oral techniques and the data from the photo-stories. In the relationship between the photographer and the photographed subject, young people were able to take on the perspective of the 'other', and give dignity and trust to the other members of their communities as members able to work and struggling for their own future. Thus, Kessi ends up arguing that the use of visual photography for community recognition and social encounters can create alternative representations that would not have been visible otherwise. Produced images of community life can be conflicting, as in this case, which shows both a "stigmatized representations of development through racial, post-colonial, and gender-discriminating discourses, and alternative images of resistance and community agency" (Kessi, 2011, p. 1).

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3.4.2.2.   *Photo-elicitation and ICT4D: What are the possibilities?*

The use of photo-elicitation is still quite unexplored within the domain of ICT4D. Recent studies in the field employ other photo-based methods similarly to studies in SR and development. I would like to mention, as an example, Nemer's book "Favela Digital" (2013), which reports on an photo-ethnographic work conducted in Brazil with marginalized people in community technology centres. In this case, the photographic material aimed to capture local experience with technology. It was produced with the help of the local community, but was not used for interviewing purposes. The work leverages on the power of reflection given by the visual material. Another example is given by Uimonen's work on art and digital media used to speak against corruption and as actors of social change (Uimonen, 2013). 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.

These few examples suggest that employing photo-elicitation within the domain of ICT4D could have several advantages for research in the field. Participant-driven photo-elicitation can be an important instrument to increase empowerment of the involved communities, listen to their voices, and encourage their participation in the development agenda, which is advocated as an important development instrument (Appadurai, 2004). Besides, photos trigger participants' reflection on given phenomena, which could help inform the design of ICT4D interventions on the field.

Photo-elicitation seems to be suitable also for decreasing the risk of getting answers structured to meet (participants' perception of) answers expected by the interviewer. This skewing of responses is typical in donor-recipient relationships (Brunello, 2010; Clark-Ibáñez, 2004; Dodman, 2003; Young & Barrett, 2001). Furthermore, researchers are often from a different context from the one they are studying and visual techniques can bridge the researcher-researched gap and enhance researcher's understanding of local realities. Finally, photo material allows for gathering more and different data in the field, which permits triangulating different data sources and results (Bignante, 2010).

3.4.3. Data generation

Data generation was based on semi-structured interviews, which were conducted with representatives of initiating agencies (i.e. UNESCO and Ministry of Science and Technology of Mozambique), members of the staff working at CMCs, users and non-users of the venues. Interviews of staff members and users included a participant-driven photo-elicitation phase, asking interviewees to take photos and explain them.

Semi-structured interviews were conducted by five researchers, including myself, participating to the project RE-ACT during the months of March and April 2011. The original goal was to interview five staff members, 10 users, and 10 non-users in each of the visited centres. While in the field, however, the social groups of users and non-users appeared to be insufficient to describe the complexity of the context. Individuals that did not use neither the telecentre nor the community radio part of the CMC, thus pure non-users, were very difficult to find. Users of the telecentre that did not use the community radio were not found at all. Additionally, users of both the telecentre and the community radio presumably had different perspectives and interactions with CMCs if compared to community members who used only the community radio component only. Hence, the original two social groups of "users" and "non-users" were replaced with three new groups: users of both components of the CMC (U-CMC), users of the community radio only (U-RC), and (pure) non-users.

In each location, interviewees were chosen on an opportunity-sampling basis: in the case of staff members and U-CMC, by approaching people who worked there, or who would come to the telecentre of the venue to use its services; in the case of U-RC and non-users, people were found in central areas of the towns (markets, schools, shops and offices, etc.). After the field work, interviews with programme representatives of CMCs' initiating agencies – UNESCO Mozambique and the Ministry of Science and Technology of the country – were also conducted. The articles included in in sections 4.1, 4.2 and 4.3 (Rega, Vannini, Fino, & Cantoni, 2013; Vannini, Rega, & Cantoni, 2013; Vannini, Rega, Sala, & Cantoni, submitted) will present more details about data generation.

During their interviews, staff members and U-CMC were also asked to take photos, prompted by questions made by the researcher. Interviewees were given a compact digital camera to take a first photo that portrayed what they liked of the venue ("*Take a photo of what you like about this place*"), a second photo to capture what they did not like or could be improved of the CMC ("*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"), and a third one to portray what the CMC represented to them (*"Take a photo of what this place means to you"*). The third question, though, proved to be too difficult for the majority of the interviewees, probably due to its level of abstraction and their inexperience to use metaphorical language with the camera. The few photos taken to answer to the third question, then, were discarded from this analysis.

The interview protocol intended to investigate social representations of CMCs by different local groups by understanding *values*, *ideas,* and *practices* connected to interviewees' experience with and conceptualisations of CMCs. Values, ideas, and practices are considered proxies of social representations, according to the definition of Moscovici (1961). The interview protocol was composed by five main parts aiming to: (i) generate visual data and an explanation of it; as well as to investigate: (ii) interviewees' demographics and familiarity with ICTs; (iii) the identity they attribute to CMCs; (iv) the relationship between the CMC and the community; and (v) interviewees' perceptions of CMCs and ICTs. Interview protocols slightly differ for the different social groups they were intended to, but they all respected the same structure. Table 3.3 summarises phases and sections of the interview protocol.

Table 3.3: Interview Protocol main sections.

Interview phase	Sections
Photo-elicitation*	What they like the most
	What they like the least/could be improved
	What the CMC represent for them
About the interviewee	Demographics
	Interviewee experience in the CMC
	Interviewee exposure to media and ICTs
CMC identity	CMC history, structures and goals
	Benchmark, models, rites and future plans of the CMC
	Services offered by the CMC
Community and the CMC	The CMC and the Community
	Staff members working at the venue
	Publics visiting the venue
Perception	Perception of the CMC and ICTs

* Only Staff members and users of both telecentre and the community radio components of CMCs (U-CMC) were requested to participate in the photo-elicitation phase.

All interviews were digitally recorded, transcribed, and labelled. Photos were named according to the name and number of the interviewee they were captured by (which indicates also interviewees' location and role/category) and to the photo they referred to (like, dislike, or photo about meaning).

3.4.4. Data analysis

Data analysis was performed on both textual and visual corpuses, taking into account, as suggested by Rose (2007), both the *level of the image* and the *level of the discourse* as concurrent facets of the production of meaning.

Visual material (*level of the image*) was examined keeping in mind the two criteria proposed by Mazzali Lurati and Cantoni (2005):

1. Images' degree of *conventionality*, which refers to the relationship between the photographs and their referent. Three main theoretical positions characterize the degree of conventionality of an image: 1) its *iconic* position, which considers that photograph is the mimesis, a copy, of the real; 2) its *indexical* position, which is focused on its process of production. Photographs are indices, i.e., unintentional imprints, and not always are they indexes, i.e., intentional signs. 3) Its *conventionalist* position, which holds as necessary that the production of photo will generate "non-transparency in respect to the real" (ibid., p. 569);

2. Images' degree of *codification*, which refers to the relationship between the visual message and the code (i.e.: the sign representing it). Codification depends on conventionality. Images levels of signification can be *denotative* (where no code is mediating the relationship between the image and the referent) and *connotative* (where the code is mediating this relationship).

In the case of photo-elicited interviews conducted for this study, they were analysed assuming they had an *iconic* degree of conventionality (i.e.: photos represented the real for the photographer), and a *denotative* degree of codification (i.e.: no code was mediating the relationship between the image and the referent). Both researcher and interviewee wanted the reality to be portrayed. However, the fact that researchers and interviewees did not share the same cultural backgrounds, together with their relationship, made as such that a certain level of *connotation* (i.e. the use of a code that mediates between the image and the referent) was present and interfering with both interviewer and interviewee will of portraying the reality as-

it-was. What I mean is that it would not have been possible to analyse the photos at their *level of the image* without studying also the *level of the discourse* (the parts of the interviews referred to the photos). The two levels together worked as what Maturana defines a "cooperative interaction" (Maturana, 1980, p. 32) that is useful for the information to be transmitted between the world of the researcher and the world of the interviewee, and make communication between the two possible.

Thus, the *level of the image* was analysed through a three-step quali-quantitative content analysis, which included a photo taxonomy, the application of a framework to narrow down the focus of image content, and a bottom-up thematic content analysis on the interview attached to each photo. The outcome of the analysis inform on users' and staff members' perception of how CMCs *are* and *should be* (further details can be found in the article in section 4.3, table 4.19). Interviews transcriptions (*level of the discourse*) were analysed through two parallel methods. First, a computer-aided analysis of the co-occurrences was performed, with a distributional and non-probabilistic approach, with the goal of mapping interviewees associations of words within "elementary context unit" (Reinert, 1983). This analysis produced six thematic clusters explaining the phenomenon of CMC in Mozambique according to the actors interviewed (see article in section 4.1).

Second, a quali-quantitative content analysis was performed on the corpus of interviews (excluding the parts of the interviews connected to the photo-elicitation phase). A first bottom-up phase led to identify thematic areas and recurrent topics. A second phase of analysis included a top-down approach, moving from the first formalization of the interpretative model built. The interpretative model was continuously refined along the process in a constant shift between a top-down and a bottom-up approach meant to be as close as possible to the data. The result of this coding process is an interpretative model structured in 18 different macro-themes. The themes inform the interpretative model of CMCs in Mozambique, according to different stakeholders' perspectives. The structure of the model is presented in the article in section 4.2 (table 4.12). Special attention was given to the analysis of the information and communication dimensions within the model, considered as one of the characteristics that lay the foundations of CMCs.

Employed data analysis methods will be explained more in detail in Chapter 4, in the articles in section 4.1, 4.2, and 4.3, along with their relative outcomes. Table 3.4 summarises

the methods of data generation and analysis employed throughout this work. Table 4.1 shows the articles, included in this thesis, where methods and results are further explained.

Table 3.47: Methods employed throughout the study

Phase of the Study	Method		Approach
Data Generation	Semi-structured interviews Photo-elicitation		Qualitative
Data Analysis	Level of the image	Three-step content analysis	Mixed methods
	Level of the discourse	Co-occurrences analysis Content analysis	

4. Outcomes

This chapter gathers together the three main articles that present the results of this research. All of them respond to the three research questions that guide this study (see section 3.3), each one with a specific focus and with a different approach.

The *first article* (Rega, Vannini, Fino, & Cantoni, 2013, presented in section 4.1) offers an analysis of the co-occurrences of words used by interviewees in their narratives. The study includes 231 interviews, all in Portuguese, conducted with all considered stakeholders (2 initiating agencies, 57 staff, 95 U-CMC, 70 U-RC, and 7 non-users). One interview conducted in English was excluded, as the kind of analysis performed did not allow multi-lingual data. Guided by the social representations theory (SRT), the article investigates how CMCs are re-interpreted and accommodated within different stakeholders' universes of beliefs, and the analogies and differences among different social groups' representations of the social object at stake. Six main clusters of meaning were identified, each of them shedding light on a specific understanding of a CMC, and they are discussed according to a set of socio-demographic variables.

The *second article* (Vannini, Rega, & Cantoni, 2013, presented in section 4.2) presents a quali-quantitative inductive content analysis of 230 interviews (229 in Portuguese and one in English) held with 57 staff members, 95 U-CMC, 70 U-RC and 8 non-users. The specific purpose of the study is to investigate how local communities perceive CMCs as information and communication enablers, how the two components of CMCs (the telecentre and the community radio) contribute to this perception, and how information messages move in relation to the communities where CMCs are located.

Finally, the *third article* (Vannini, Rega, Sala, & Cantoni, submitted, presented in section 4.3) introduce the method of photo-elicitation, and a three-steps qualitative analysis performed to deal with both the visual and the discursive data generated. For this study, 194 photos and 194 interview sections were analysed, resulting from interviewing 48 staff members and 53 U-CMC. Other stakeholders were not involved in the photo-elicitation interview protocol, due to their reduced level of direct experience with CMCs location. With this novel methodology, the article investigates CMCs' features that are valued by different local stakeholders, ultimately shedding light on both acknowledged and overlooked aspects of their ideal CMC.

The articles tackle the three main research questions that guide this work by means of different sub-questions. Specifically:

1. The three articles identify different social groups' social representations of CMCs in Mozambique. First (section 4.1), a general overview is given on the universes of beliefs associated with CMCs in Mozambique, represented by six clusters of meanings. Second (section 4.2), special attention to CMCs' characteristic as information and communication enabler is given. The article reports on how this characteristic is perceived by local stakeholders. Third (section 4.3), Staff members' and users' values of how and what a CMC should and should not be is reported.

2. The three articles employ the theoretical paradigm of SRT, and suggest it 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.

3. The three articles employ different methods to assess CMCs' social representations, allowing at the same time in-depth analysis and results' triangulation. First (section 4.1), an analysis of the so-called "lexical universes" by the interviewees was performed, by means of automated text analyses and distributional approaches to map association and co-occurrences of words within discourses. This analysis is in line with social representations studies performed in other areas, but was never applied to ICT4D, yet. Second (section 4.2), a content analysis on interviews was employed. The method was already employed and proofed effective in similar studies in social representations and ICT4D, and allowed a more in-depth analysis than the first. Third (section 4.3), photo-elicitation is proposed as an unexplored and promising method for data generation to uncover representations otherwise difficult to be accessed in ICT4D. A protocol of analysis that include both the level of the visual and the discursive levels of content generated by the research, combining deductive and inductive paradigms, is also offered.

Finally, the journals where the articles were (or have to be) published were chosen according to the ranking proposed by Heeks (2010), where they are listed as the top three for the field of ICT4D.

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Table 4.1 provides a synoptic view of the articles, the research questions guiding them, the methods employed for data generation and analysis, and the outcomes of each analysis.

Table 4.8: Summary of methods of data generation, data analysis, research questions and outcomes that will be found in the articles that constitute this chapter.

Article title	Data generated	Method	Research questions	Method	Software-aided?	Phases	Outcomes
	Data Generation			**Data analysis**			
1. *Exploring the meanings of Community Multimedia Centres in Mozambique: A Social Representation Perspective* (ITID, Vol.9, Issue 4, 2013). Section 4.1. 	231 Semi-structured interviews, all in Portuguese; all stakeholders (2 initiating agencies, 57 staff, 95 U-CMC, 70 U-RC, and 7 non-users). One interview in English was excluded.	Selection of the sample of 10 CMCs out of 34; Interview protocol.	1. What is the meaning of CMCs according to different social actors? How were CMCs re-interpreted and accommodated within their consensual universe of beliefs? 2. Are there analogies and differences related to interviewees' status, socio-demographic characteristics, and location?	Co-occurrences analysis	Yes (T-Lab)	Lemmatisation of the textual corpus; thematic analysis through K-means bisecting clustering; segmentation of the text into elementary context units (ECUs).	6 clusters describing the lexical universes around the CMC; respective characterising ECUs; lemmas ordered by Chi^2; respective categorical variables.
2. *Information and Communication Flows through Community Multimedia Centers: Perspectives from Mozambican Communities* (ITD, November 2013).	230 Semi-structured interviews, (229 in Portuguese and one in English) to all stakeholders except initiating agencies: 57 staff, 95 U-CMC, 70 U-RC and 8 non-users	Selection of the sample of 10 CMCs out of 34; Interview protocol.	1. Do locals perceive CMCs as information and communication enablers? 2. How does the information message move in relation to the local community? 3. Which component of CMCs is perceived to convey more information and communication?	Content Analysis (Inductive)	Yes (N-Vivo)	Iterative phases of bottom-up and top-down coding processes.	CMC interpretational model and special focus on information and communication dimensions.

Section 4.2			4. Do demographically different groups have different perceptions of information and communication at CMCs?				
3. *Using Photo-elicitation to Explore Social Representations of Community Multimedia Centers in Mozambique* (submitted to EJISDC, under revision). Section 4.3.	194 photos and 194 interview sections, all in Portuguese, to 48 staff and 53 U-CMC.	Selection of the sample of 10 CMCs out of 34; Photo-elicitation protocol.	1. Which component of CMCs is most connected to features that are valued by local stakeholders? Which one is connected to features that should be improved? 2. Ultimately, which component of CMCs is mostly connected to how a CMC should and should not be? 3. Do different social groups (staff members versus users) have different views regarding CMCs?	Three-step Content Analysis (both inductive and deductive)	Yes (N-Vivo)	Photo Taxonomy; Application of the OCM framework; Thematic Analysis	29 Thematic areas conducing to communities' representation of the ideal CMC connected to three broad spaces of the CMC and to their reference to people managing or people using the venue, and services or facilities and tools available at the venue.

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

Authors:	Isabella Rega, **Sara Vannini**, Emanuele Fino, Lorenzo Cantoni
Publication outlet:	Information Technologies & International Development Journal, Vol.9, Issue 4, 2013.

4.1.1. 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 socio-demographic 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.

4.1.2. 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" (Creech, 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.

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 socio-psychological 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.

4.1.3. 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 pre-existing 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 (Markovà, 2000), Moscovici did not functionally separate the subject and object in his SRT (Moscovici, 1984). Such "dialogical" epistemology (Markovà, 2003) is based on implementation of the ego–alter–object semiotic triangle (Moscovici, 2000; Figure 4.1), which assumes SRs are a "space-in-between, a medium linking object, subject and activities" (Bauer & Gaskell, 1999, p. 167).
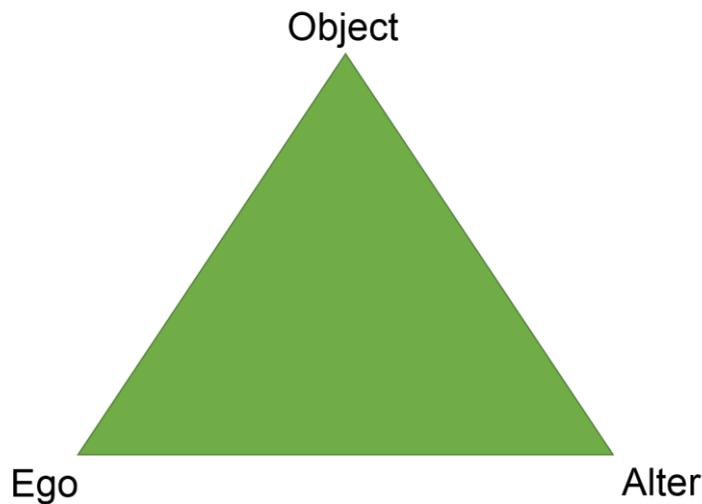
Figure 4.1: The semiotic triangle Ego-Alter-Object.

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 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 (A. Contarello & Sarrica, 2007; Alberta Contarello, Fortunati, & Sarrica, 2007; Sensales, 1990) and their reflections on identities, cultures, and social changes (Alberta 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

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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).

4.1.4. 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.

4.1.4.1. 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) socio-demographic characteristics, such as age, education, and gender; and (c) location.

4.1.4.2. 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 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 pre-existing 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 4.2 maps the locations of the CMCs in the sample (in red) among the totality in the country (in blue).

Semi-structured 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 nonusers (i.e., individuals using neither the CMC's telecenter nor the community radio) were difficult to and, a need to distinguish between users of both components and users of radio only became important. The original two statuses of users and nonusers 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.
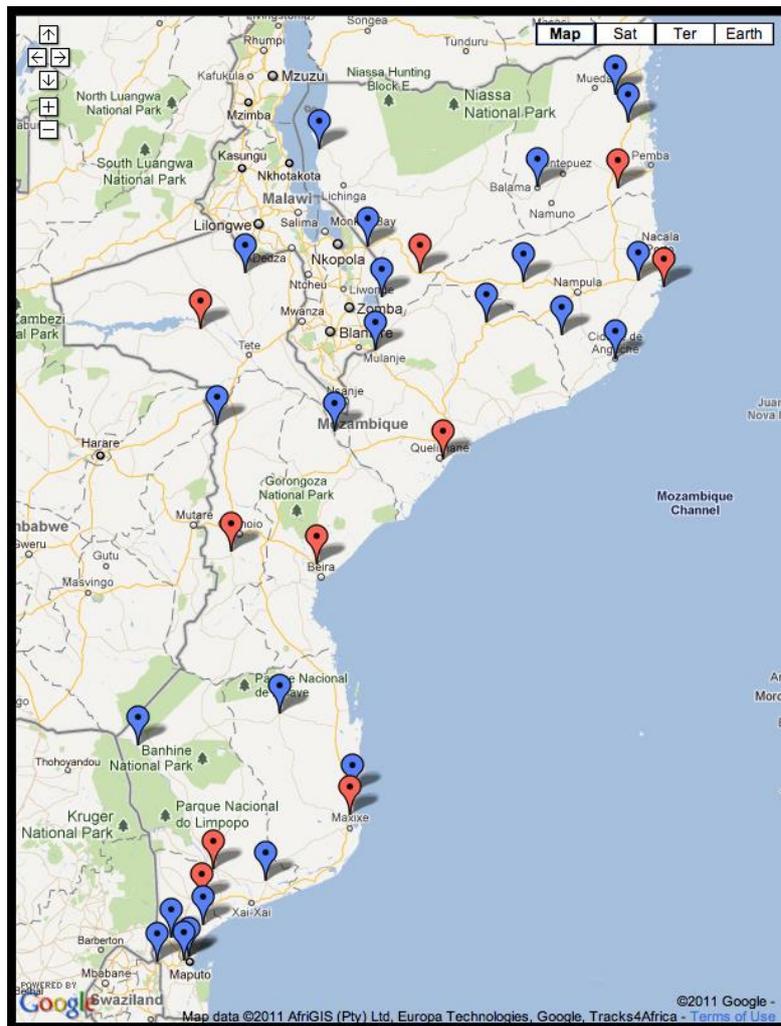
Figure 4.14: Map of CMCs in Mozambique (April 2011). Red pins show CMCs included in this study.

4.1.4.3.   Data Generation

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 4.2 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.

Table 4.9: Demographics of the interviews (# 231)

	Gender		Age group					Education						
	Female	Male	10–19 yrs.	20–29 yrs.	30–39 yrs.	40+ yrs.	N/A	No school	Primary	Secondary	High	University	N/A	Horizontal totals
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	

The interview protocol was prepared and validated by following a semi-structured 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 4.3).

Interviews lasted from a minimum of seven minutes to a maximum of 214 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 ale 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.

Table 4.3: Interview Protocol

Section	Section content
1	About the Interviewee Demographics Interviewee experience in the CMC Interviewee exposure to media and ICTs
2	CMC Identity CMC history, structures, and goals Benchmark, models, rites, and CMC's future plans Services offered by the CMC
3	Community and the CMC Profile and activities of the community staff members working at the venue Publics visiting the venue
4	Perception of the CMC and ICTs

4.1.4.4. 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 socio-demographic 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 chi^2 value, a measure of the co-occurrence of each word within the ECUs (Reinert, 1993). Interpretation of results was based mainly on lemmas whose chi^2 values were higher than 100, as reported in the tables describing each cluster (Tables 4.5–4.10) and in the text in italics. When more lemmas semantically characterizing the cluster were found, they were reported in the text and their relative chi^2 values were specified in brackets.

4.1.5. 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 4.3 and Table 4.4 summarize the results, which are explained in detail in the following subsections.
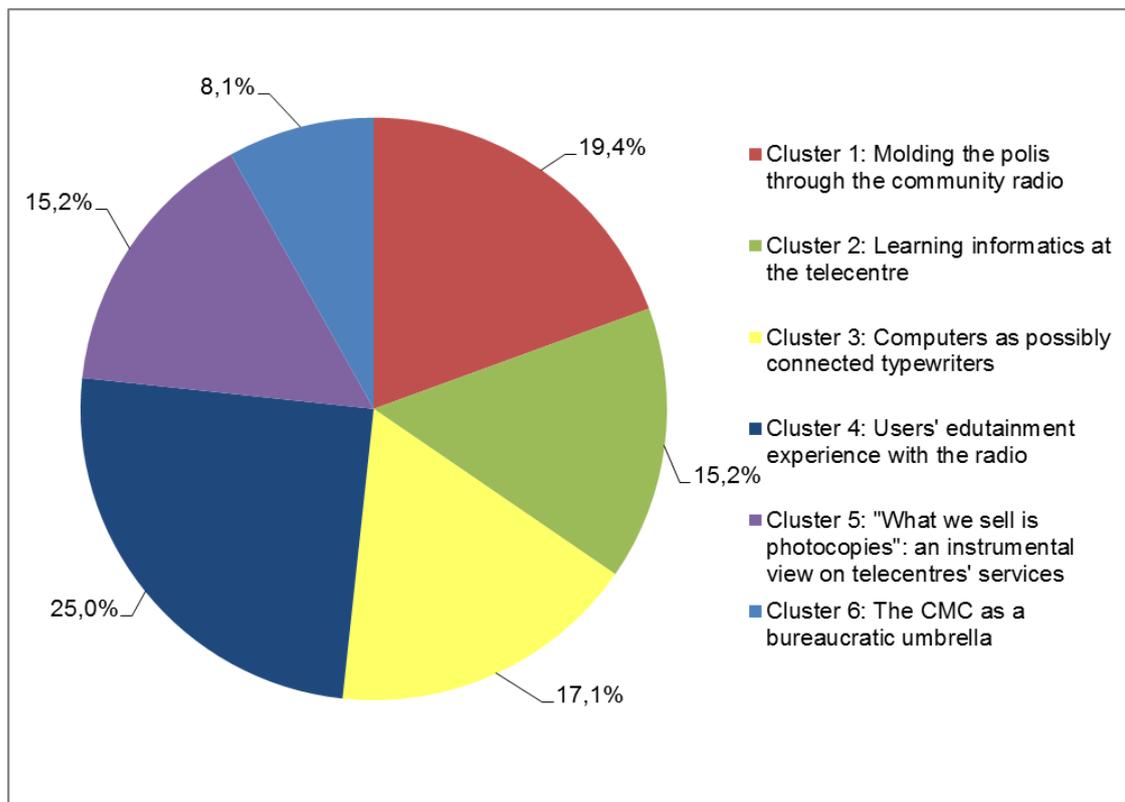
Figure 4.3: Overview of the resulting clusters according to their weight within the total corpus.

Table 4.4: Overview of the Lemmas and Themes within the Resulting Clusters.

	Clusters					
	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

Each cluster was also characterized by socio-demographic variables, which helped in shaping the SR of the social groups involved (see Figures 4.4 – 4.9).
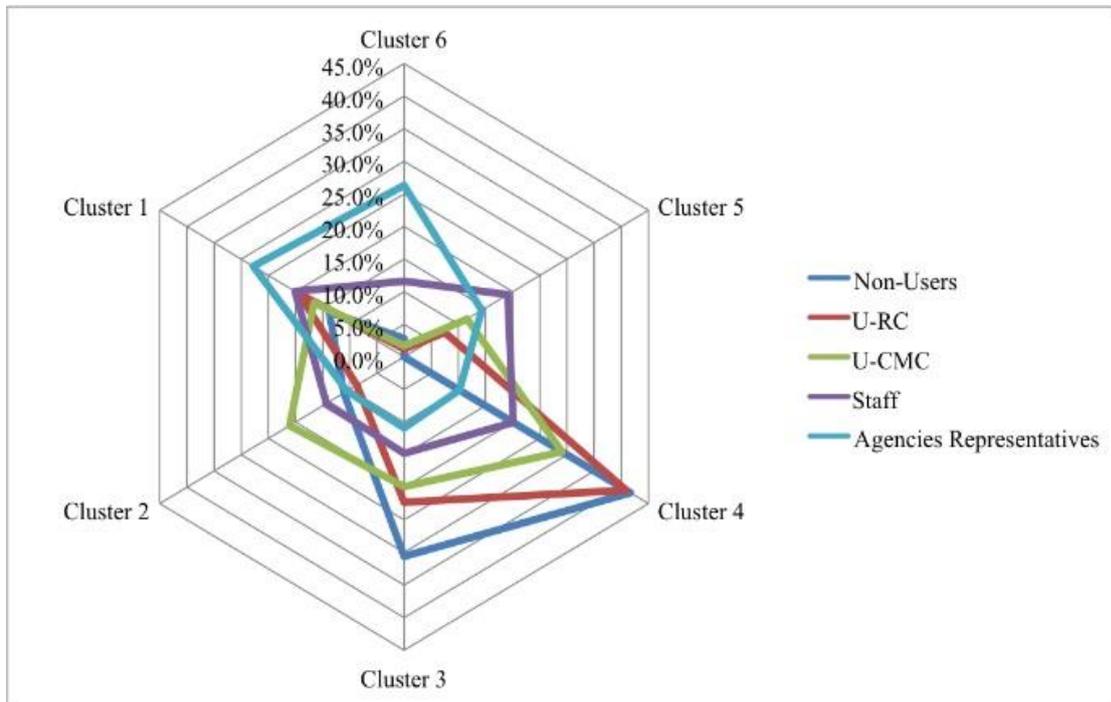
Figure 4.4: Composition of the thematic clusters according to interviewees' status.
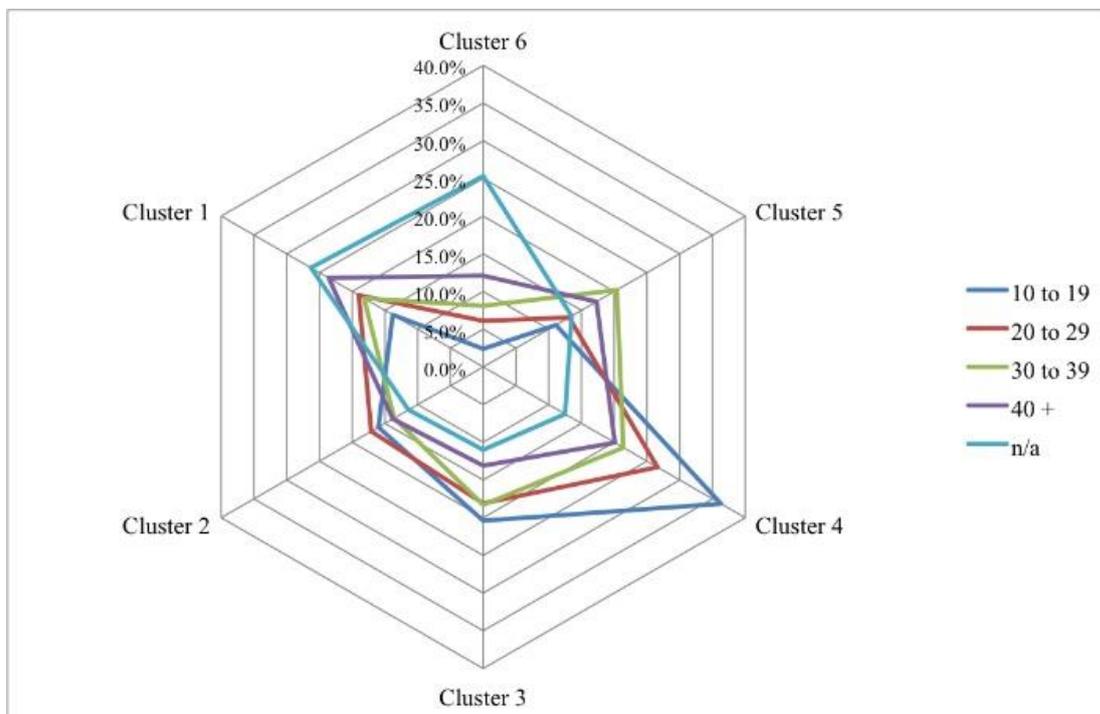
Figure 4.5: Composition of the thematic clusters according to interviewees' age level.
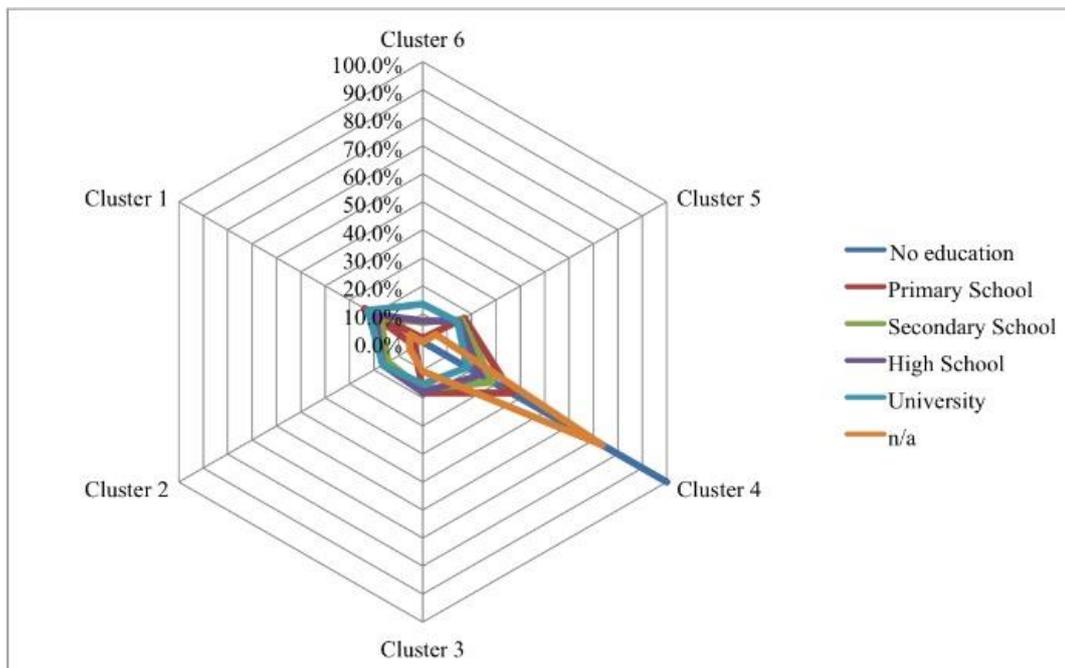
Figure 4.6: Composition of the thematic clusters according to interviewees' education level.
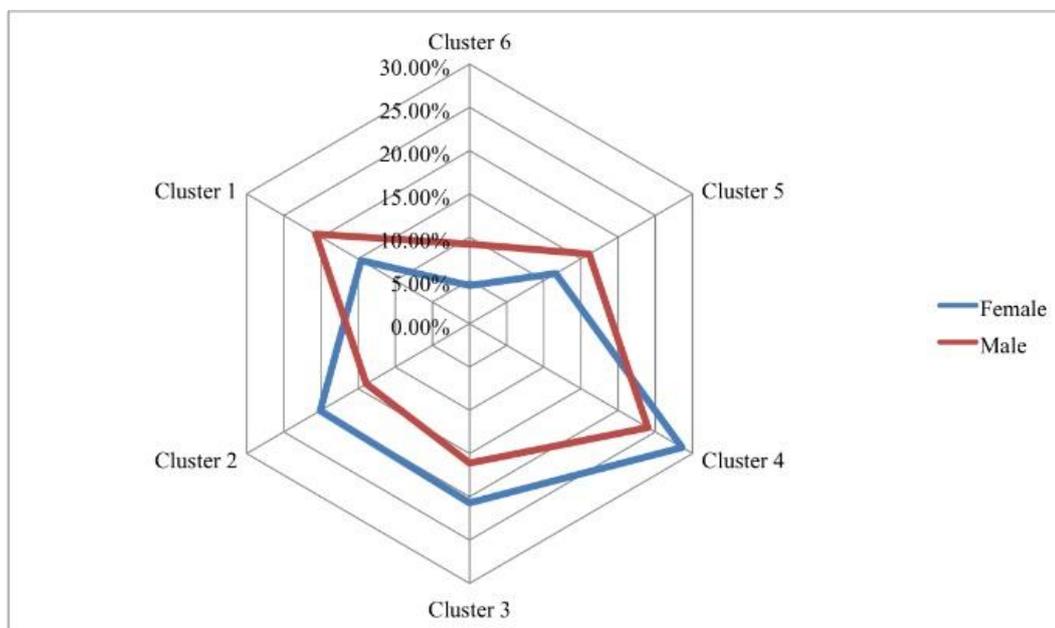
Figure 4.715: Composition of the thematic clusters according to interviewees' gender.
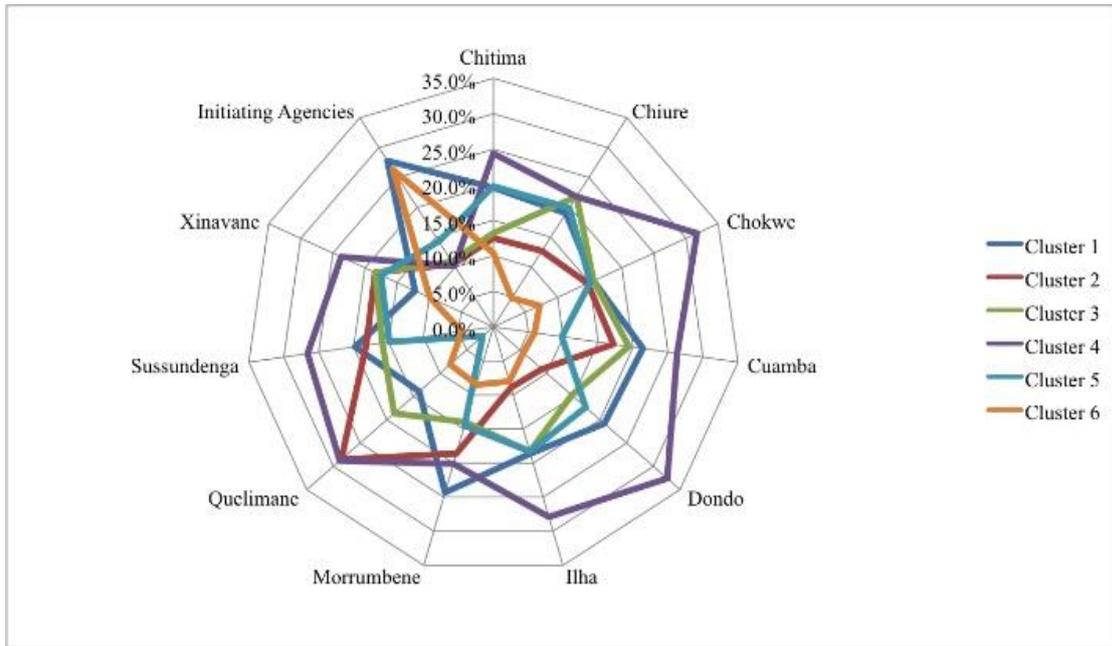
Figure 4.816: Composition of the thematic clusters according to interviewees' location.
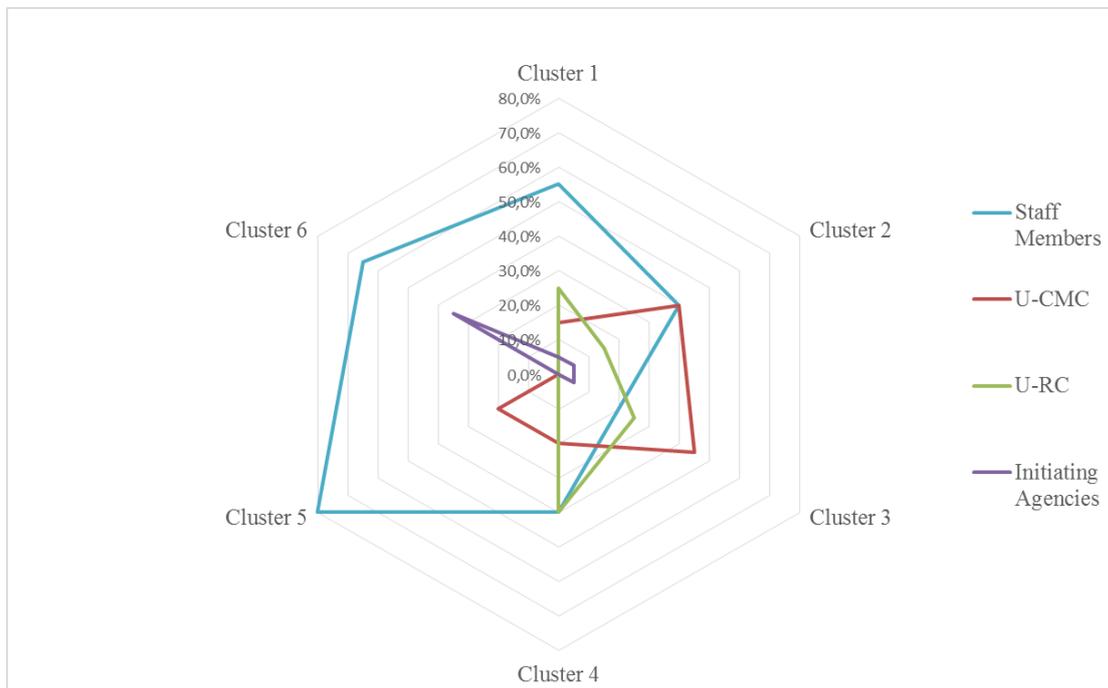
Figure 4.917: Composition of the thematic clusters according to the statuses' UCE according to the clusters.

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* (chi^2 74.3) and *newspapers* (chi^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 times, and the *population* (chi^2 55.9) is identified as the final beneficiary of its activity. Community radio has the potential to foster socio-political *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.*

In Table 4.5, the lemmas and variables that characterize this cluster are identified and listed according to their chi^2 values and occurrences, both in the cluster and in the total corpus.

Table 4.6: Lemmas Characterizing Cluster 1.

Lemmas	Chi²	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

The main example of this cluster relates to the town of Cuamba. Cuamba lies in the north-eastern 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 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 participation 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 socio-political 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*.

4.1.5.2.   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 conceptual dimension that relates to training and education.

Within the community, the telecenters' main functions relate to places where users go to learn (chi^2 79.5) how to use computers (chi^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 (chi^2 87.1) and teachers/trainers (chi^2 73.3). The experience is structured 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* (chi^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 useful one (Fanni, Tardini, Rega, Cantoni, & Van Zyl, 2010).

Table 4.610: Lemmas Characterizing Cluster 2.

Lemmas	Chi²	E.C. in cluster	E.C. in total
Informatics	2823.5	763	956
Course	1942.7	503	611
Room	1111.7	308	390
Class	154.9	92	181
Training	129.4	141	366
Train	106.4	98	237
English	105.9	37	54

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%).

4.1.5.3. Cluster 3: Computers as (Virtually) Connected Typewriters

This cluster reveals the representations social actors have about *computers.* Computers are seen as augmented *typewriters* (in Portuguese, "maquina de escrever" literally means "machine for writing") 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 artefact 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 (chi^2 59.3);
2. They enable students to complete their schoolwork; and
3. They are a tool for writing and printing (chi^2 39.7) every sort of document (chi^2 35.3).

Table 4.7: Lemmas Characterizing Cluster 3.

Lemmas	Chi²	E.C. in cluster	E.C. in total
Computer	1716.2	987	1,813
Internet	1557.4	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

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

3. 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' 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%).

4.1.5.4. *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,

> *They 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.

Table 4.8: Lemmas and Variables Characterizing Cluster 4.

Lemmas	Variables	Chi²	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
	_STAT_RCUSR[*]	104.7	315	770

* "_STAT_RCUSR" is the variable indicating interviewees' status (_STAT) that refers to RC users.

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* (chi^2 50.8), and who recognize the radio for its (informal) *educational* role (chi^2 34.8).

More radio content related to the socio-educational paradigm is mentioned. On one hand, women's programs (chi^2 32.1) that deal mainly with women's rights and debates (chi^2 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 (chi^2 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.

4.1.5.5. *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.*

> *"One 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* (chi^2 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* (chi^2 55.8), *printing* (chi^2 55.7), and sending and receiving *faxes* (chi^2 54.4), using terms such as *working* (chi^2 45.8), *machines* (chi^2 30.8), and using (*copying, taking*) the services (*attend,* chi^2 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* (chi^2 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.

Table 4.9: Lemmas Characterizing Cluster 5.

Lemmas	Chi²	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

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).

4.1.5.6.   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 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* (chi^2 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* (chi^2 86.3), and organizing *meetings* (chi^2 66.9), to the

specific mention of accountability, such as *money, paying, accounts* (chi^2 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 artefact or *model* (chi^2 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 (chi^2 42.7) and pay salaries (chi^2 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 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.

Table 4.1011: Lemmas and Variables Characterizing Cluster 6.

Lemmas	Variables	Chi²	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	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

* _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.

4.1.6. 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 emphasizing 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' socio-political 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 socio-political 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 interviewees. Discussions of radios as a means of socio-political 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 socio-political 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.

4.1.7. 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 outcomes 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 socio-developmental 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.

4.2. Information and Communication Flows through Community Multimedia Centers: Perspectives from Mozambican Communities

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4.2.1. Abstract

Community multimedia centers (CMCs) are considered by initiating agencies as instruments able to inform, entertain and educate the population, as well as to offer them a voice into knowledge society and to public initiatives. This article presents a quali-quantitative content analysis of 230 interviews held with staff members, users of the venues, people of the community who listen to their radio component but do not use their telecenters, and community members not using CMCs. The sample includes 10 CMCs around Mozambique. The purpose of the study is to investigate the perception of local communities of inbound, outbound, and shared information and communication flows connected to CMCs. Results highlight how CMCs are perceived as inbound information enablers, mostly by means of their community radio component, and as means to share information and communication within the communities' boundaries. Yet, CMCs still do not appear to be widely recognized as participation means to a reality that transcends the communities' physical borders.

4.2.2. Introduction

Community multimedia centers (CMCs) are community-based public access venues (PAVs) that combine a community radio with a telecenter. Their primary aim is to foster equitable access to information and knowledge for development, reduce the digital divide, promote social inclusion and civil participation, and promote the circulation of content that supports communities in improving their daily life conditions (Creech, 2006). The official documents of the model of CMCs emphasize the dimensions of information and communication among its grounding aspects, and underline how information and communication should be catalyzed and reinforced by the synergy among the two components of the radio and the telecenter (UNESCO, 2004). Through CMCs, local community members can access and use a number of different information and

communication technologies (ICTs), such as computers, the Internet, digital libraries, fax, photocopy machines, etc., and can listen and participate in a local radio station that is managed by local people and broadcasts community relevant information in native and national languages.

The CMC program was established by UNESCO in 2001 in Africa, Asia and the Caribbean, and its scale-up phase was launched at the World Summit of the Information Society of Geneva in 2003 (WSIS, 2003). Three African countries, including Mozambique, were selected for this initiative due to the success of a previous pilot phase. Supported, among others, by the Swiss Agency for Development and Cooperation, the scale-up phase aimed to build 50 CMCs in the following years (UNESCO, 2004). In 2010, the Mozambican Ministry of Science and Technology (MCT) took charge of the program, with the goal of creating one CMC in each of the 128 districts of the country in the following five years (MCT, 2008). This program made of CMCs a strategic contribution to achieving the national development and ICT goals of the country. In 2011, 34 CMCs were in place all over the country. Despite inconsistencies in resources and services offered, CMCs remain the prevailing typology of PAV in Mozambique (Rega et al., 2011).

Based on the theoretical framework of Social Representations Theory, illustrated in Section 4.2.3, this article investigates how the information and communication function of CMCs are perceived by local stakeholders in the communities where they operate. Section 4.2.3 presents the adopted research design, while Section 4.2.4 presents and discusses the research results. Implications for CMCs sustainability and for further advancement in the research area of PAVs are drawn in Section 4.2.5.

4.2.3. Social representations: a communication perspective

In this article, information and communication are considered in their different typologies of acquired, transmittable, and sharable flows, according to (i) the location of the sender of the message (inside or outside the community); and (ii) the direction of the message in relation to the local community (within or across its boundaries). This approach is inspired by the work of Heeks (2002), who suggested an information-centered perspective, adopted an information chain approach to explain resources movements and directions in relation to telecenters, and studied resources brought in and taken out of the community (Heeks & Kanashiro, 2009).

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When communication happens, messages are exchanged, decoded and negotiated among individuals of a given social group. The negotiation of messages and meanings among social groups contributes to the groups' construction of a system of reference to understand reality, to make it meaningful, and to permit the repetition of the communication act. A communication perspective, then, lays at the basis of the theory of Social Representations (Moscovici, 1961), defined as:

> *systems of values, ideas and practices with a twofold function; first, to establish an order which will enable individuals to orientate themselves in their material and social world and to master it; and secondly to enable communication to take place among the members of a community by providing them with a code for social exchange and a code for naming and classifying unambiguously the various aspects of their world and their individual and group history. (pp. IX–XIV)*

This perspective was adopted to study the perception that different stakeholders have of CMCs as information and communication enablers, as well as to investigate wider meanings of CMCs in Mozambique. Similarities and differences in local representations and narratives will be also investigated according to social groups' demographic characteristics.

4.2.4. Research design

This article reports on local stakeholders' perceptions of the information and communication function of CMCs in Mozambique. In particular, it will analyze:

1. Whether different social groups perceive CMCs as information and communication enablers;
2. Which the perceived directions of the message in relation to the local community (within or across its boundaries) are;
3. Which one of the two components of CMCs is perceived to convey more information and communication flows;
4. Whether different social groups, according to different demographics, have different perceptions of information and communication flows connected to CMCs.

The following sections will describe the research design implemented in the study.

4.2.4.1.   Selection of the sample

A sample of 10 CMCs out of the 34 in the country (Vannini & Rega, 2012) was selected, and various criteria were chosen to make the sample as demonstrative of the Mozambican situation as possible:

1. First, a geographic criterion was applied: one CMC per province of the country was included, mirroring their real distribution as rural (9 CMCs in the selected sample) and urban ones (1 CMC);

2. The second criterion applied was the ownership type: CMCs in the country are managed mostly by local associations (7 included in the sample), as well as by the Government through the Institute of Social Communication of Mozambique (2 included in the sample), and by religious institutions (1 included in the sample, managed by an Order of Catholic Sisters);

3. The year of foundation of the venue was also taken into account: some CMCs in Mozambique were built at the very beginning of the UNESCO program, and some did exist even before as either stand-alone community radios or telecenters (in our sample, the oldest community radio station was established in 2000, and the oldest telecenter in 2001); some CMCs were established only as recently as 2010 by the MCT (1 included in the sample);

4. The last criterion applied aimed to balance CMCs according to their variety of services, including both fully functional and more deficient ones. While all the centers had benefitted of the Internet in their past, and staff members still had ways to connect in most of the cases, only 2 CMCs offered access to the Internet to the public at the time of data collection (March–April 2011). This reflects the situation of Internet access of CMCs in the country. Out of 34 venues, all of them surveyed by the researchers by telephone during the month of January 2013, only 8 (23.5% of the total) declared to offer the Inter- net connection to the public. In the survey, 4 of the centers included in this research declared to offer the Internet connection to the public (40%). However, only 2 CMCs of the sample really offered the Internet connection to the public when researchers visited them (20%).

In addition, the majority of the venues had offline digital libraries and produced newspapers ("newspaper on the wall"), and some offered services that were not initially foreseen by the original model (i.e.: language courses, cinema shows, etc.). There against,

Community Radio programs and photocopies were common services offered by all CMCs, while basic computer courses were present in 7 out of the 10 CMCs included in the sample (for a detailed map of the services offered in each CMC included in the sample, see Rega et al., 2011).

4.2.4.2.   Data collection

During March and April 2011, six researchers undertook three different field trips to run semi-structured interviews: one to the Southern provinces of the country (Inhambane, Gaza, and Maputo), one to the Central provinces (Tete, Manica, Sofala and Zambezia), and one to the Northern ones (Cabo Delgado, Nampula and Niassa).

In determining the sample pool size, the initial goal was to interview a sample of the population that was as representative of the local interactions (or non-interactions) with the CMC. The intention was to interview, for each center, 5 members of the local staff (both paid collaborators and volunteers), 10 users, and 10 members of the community who did not use the facility (non-users). During the fieldwork, however, it became clear that non-users were not illustrative of the local population: Community Radios are, in fact, a very pervasive medium within the communities, and pure non-users were rare. Thus, the final subject pool utilized was of 230 interviews, divided as follows:

- 57 *staff members*: individuals from the community who were working or volunteering at the CMC;

- 93 *CMC whole users*: people using both components of the CMC (telecenter and community radio);

- 72 *radio-only users*: individuals who listened and interacted with the radio, but never used the telecenter component;

- 8 *non-users*: people in the community who never listened to the radio nor accessed the telecenter.

Different interview protocols, corresponding to different interviewee categories, have been prepared by the researchers, by following a semi-structure interview approach (Harcourt, 2006). The interview protocols were intended to investigate *values, ideas* and *practices* (Moscovici, 1961), ultimately social representations, that interviewees attribute to CMCs. The protocol was organized into four main parts, as shown in Table 4.11.

Table 4.1112: Interview protocols sections

About the interviewee	Demographics
	Interviewee experience in the CMC
	Interviewee exposure to media and ICTs
CMC identity	CMC history, structures, and goals
	Benchmark, models, rites and future plans of the CMC
	Services offered by the CMC
Community and the CMC	The CMC and the Community
	People working at the venue
	People visiting the venue
Perception	Perception of the CMC and ICTs

Interviews lasted from a minimum of 7:08 minutes to a maximum of 2 hours and 14 minutes, depending on the category of interviewee: non-users interviews lasted less, due to the competence of the interviewees on the topic, and staff members' interviews lasted more, due to the complexity of their relation and interaction with the social object at stake. Overall, researchers collected 109 hours and 19 minutes of recorded interviews.

4.2.4.3.   Data analysis

Each interview audio file was named by indicating the location where the interview took place, interviewee category, number of interviewee for that category in the given CMC (e.g.: "Cuamba_Staff2" stays for CMC of Cuamba, second staff member interviewed). Then, interviews were transcribed and coded. A quali-quantitative content analysis approach was chosen (Krippendorff, 2003), with a first bottom-up phase leading to a preliminary explorative analysis done by using paper and pencil on a small number of interviews. This explorative analysis aimed to identify thematic areas and recurrent topics. At this point, a first formalization of the interpretative model was drawn. To manage the large body of data, a software for qualitative content analysis (NVivo, version 9.2) was used. A second phase of analysis included a top-down approach, moving from the first formalization of the interpretative model built. During the coding process, the interpretative model was continuously refined, in a constant shift between a top-down and a bottom-up approach meant to let the data "talk."

The result of this coding process is an interpretative model structured in 18 different macro- themes, each of which opening up into sub-themes. While two of the macro-themes refer to *people*, the remaining 16 inform the complex social representation system of CMCs in Mozambique. The structure of the model is presented in Table 4.12.

Table 4.12: CMCs interpretative model based on content analysis

Values	Ideas	Practices	People
Benefits of CMC Benefits of ICTs Motivation to work in CMC Motivation to use CMC Reasons not to use CMC	Definitions of CMC, Community Radio, Telecentre, computer, Internet Improvements needed in/challenges for the CMC Local denomination of CMC Services of the Community Radio Services of the Telecentre Services working properly	Community involvement/support in the CMC Promotion of CMC Synergies the CMC is able to create Usages of the Community Radio Usages of the Telecentre	Interviewee media exposure Staff Training

This article reports on the discourses related to interviewees' perceptions on information and communication flows: in the model, their discourses are part of the macro-theme "Benefits of CMC," which refers to the *values* component of social representations of Mozambican CMCs. As mentioned in Section 4.2.4, information and communication flows were divided into three types, according to the location of the sender (inside or outside the community), and to the direction of the message (within or across the boundaries of the community). These three types of flows will be referred to as "inbound," "outbound," and "shared within" information and communication flows:

1. Inbound: includes all discourses about information and communication flows where the interviewee refers to information and communication received by the community from the outside. The information is, therefore, generated outside the community, and the CMC receives it and re-transmits it to the community. E.g.: international and national news, weather forecasts, etc.;

2. Outbound: includes all statements referring to information and communication that is produced in and sent out from the community. For example, information the community sends to other villages and cities of the same region, or to governmental institutions;

3. Shared within the community: includes all information, communication and knowledge that the community produces and shares within its boundaries. For example, lost and found announcements, advertisements of products, facts concerning community members, etc.

All discourses referring to generic benefits of CMCs in terms of information and communication that did not specify the direction and sender of the stream of information, and where the interviewee did not argue or explain their opinion, were excluded from this analysis.

Differences of perceptions of CMCs information and communication flows by distinct social groups were investigated by performing a further analysis that considered socio-demographic variables:

- Interviewees' *category*: staff members, users of both components of CMCs (U-CMC), users of the radio component only (U-RC), people of the community who do not use the CMC (non-users);

- Interviewees' *education level*: primary school, secondary school, high school, university, or no formal education received;

- Interviewees' *age*: 10–19 years old, 20–29 years old, 30–39 years old, 40 or older.

According to the afore-mentioned variables, the general sample of interviewees is distributed as shown in Tables 4.14 and 4.15.

4.2.5. Results

Beside information and communication, benefits of CMCs identified by the content analysis, include: learning, participation to the local socio-political life, edutainment activities, sparing money, being prepared for a better job, and having access to ICTs in general. Among them, information and communication flows constitute a key subject within the discourses related to the benefits of CMCs: in all cases, discourses were related to either the radio or the telecenter components of the venue, and never to the CMC as a whole.

Clearly, community radios are widely perceived as the place where communities' information and communication needs are mostly answered: community radios surface in 60.9% of the interviews that referred to information and communication, and telecenters only

7.4%.

Information and communication discourses related to community radios are especially connected to inbound streams (46.1%), and to flows that are shared inside community boundaries (34.3%), thus picturing the radio as a means for the members of the community to receive information and to communicate among themselves. The fact that only 4.8% of the discourses refers to outbound radio flows does not appear surprising, given the very nature of the medium: this kind of information stream would be expected to be related to the telecenter component of CMCs. Telecenters, however, do not seem to be perceived as information and communication enablers (only 7.4% of the interviewees mentioned it), and only as few as 0.4% of the discourses referred to their outbound communication function. Table 4.13 summarizes the aforementioned results.

Table 4.13: Presence of discourses on information and communication flows in the interviews

	%	#
Community Radio	60,9%	140
Inbound	46,1%	106
Outbound	4,8%	11
Shared within	34,3%	79
Telecentre	7,4%	17
Inbound	6,5%	15
Outbound	0,4%	1
Shared within	0,4%	1
	100,0%	230

The following sections will report on these results in detail, summarizing discourses about information and communication connected to either community radios or telecenters, and presenting socio-demographic differences among interviewees.

4.2.5.1. Community radios: a democratic means to reinforce communities' social belonging

Examples of radio perceptions as *inbound* information enablers include listening to international and national news:

> *The people here need to know what is happening. They need to get information about other part of the world, Chitima, Non-user3.*

Getting information about government programs:

I think the radio created this space to let people stay close to that not everything that is happening is against the population [...] and when the Government does something, they know that the Radio is going to broadcast it, Chiure, User3.

And getting developmental information about the relevant economic activities of the com- munities they serve:

Most of all for the agriculture, it is one of the mass communication mean to tell when is the appropriate sowing time, when is the appropriate time for the harvest, what is going to happen in the land, what the peasant has to prepare for the land to be productive, Cuamba, Non-user2.

In parallel, discourses of radios as means where social groups can share information and communicate with the other members of their community include numerous examples of announcements about relatives' illness and deaths, lost children, lost and found objects, and local commercials:

It is different because, for example, before we had the radio, when someone died you had to send someone to notice it to the family, but now if someone dies, you can just transmit an announcement through the radio, Chitima, Staff1.

This function of the radio is indeed valuable for local people, for it is a fast, efficient, economic, and, in some cases, the only way to permit communication flows to be conveyed throughout the community:

There are families that don't have other means to inform their relatives of an unhappy event [...] there are families that don't own a mobile phone [...] so they had to go to Xai-Xai, Chokwe, User6; It is important because without the radio there is no communication with the people [of the community] that live more distant, Cuamba, User8;

We don't need phone balance anymore to call to someone [...] so with the radio we are transmitting the information to the community, it is important, they use a lot this service, it means that the radio is helping, Morrumbene, Staff5.

The few references to radios-related *outbound* communication flows are focused on the added value of being heard by nearby villages or by the main province city:

...[before the radio was here] it was an extinguished world, you did not know whether we existed, Chiure, User8;

There in Nampula they are listening that someone died in the island [...] so it is very important to have the radio, Ilha de Moçambique, User2.

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Still, probably due to the nature of community radios as local entities, the possibility to use their communication potential as a means to actively participating to a bigger national or inter- national reality is not contemplated.

Perceptions about radio *shared within* communication flows reveal how widely community radios are perceived as a means to act as social aggregators, and to respond to local information needs. Reasons for this success lays on the facts that they rely on oral communication and broad- cast in local languages, thus permitting everybody to understand, and fitting the needs of a culture that is traditionally oral:

> *Everyone pays attention because they have programs in Portuguese and programs in the Emakwa language, it is for that that the communities listen, Chiure, User 1.*

4.2.5.2. Telecenters: still not a window to the outside world

Telecenters were created to serve as points of access to ICTs, and to address information and knowledge needs of underserved communities (Unwin, 2009). Thus, telecenters are expected to be places to get information and communicate with the outside world, via computers and the Internet.

As mentioned before, discourses about communication flows related to telecenters were surprisingly few, and referred more to telecenters' *inbound* information value for the community than to its *outbound* information and communication potential:

> *In the computer there is a lot of information we can get, Cuamba, Non-user1.*

 and

> *Because people go there, in the Internet, and look for information, and inform the community, and the community is fulfilled in listening to the things that who went to [use] the Internet found, Cuamba, Non-User4.*

Similarly, telecenters are not perceived as means to *share* information and to communicate within the community itself (possibility mentioned only by 0.4% of the interviewees). This datum reflects how access to the Internet is still a challenge not only for most of the individuals living in the communities, but also for the same CMCs: When the field work for this study was collected, only 2 out of 10 centers offered an Internet connection to the public, even if all of them used to have it in the past. CMCs are used as digital literacy training venues and centers to take photocopies, and not as much as places to freely access to

computers and the web, activities that would permit an exchange of information and communication flows (see Rega et al., 2011; Vannini & Rega, 2012).

4.2.5.3.   Socio-demographic analysis

Differences in perceptions were analyzed also according to three socio-demographic variables: interviewees' category, education level, and age group. While no substantial differences among the groups were found regarding interviewees' age, the analysis on interviewees' category, education level, and CMC locations shed light on some interesting insights, which will be illustrated in the following sub-sections.

Interviewees' category

A deeper analysis on representations of CMCs connected to information and communication flows by different interviewees' typologies revealed an interesting insight on local *staff members*, who are far keener to recognize these flows as related to the community radio (78.9%) than to the telecenter (5.3%). Telecenters appear quite rarely in staff discourses, and they are always connected to the inbound information potential of the telecenter, and never to be shared-within-the-community or outbound communication flows: they are places where they can get information that they will then broadcast to the whole community through the radio.

Besides, staff members do not focus at all on the potential of computers and the Internet as means to communicate to an external world, which could open the horizons of rural communities: again, telecenters are considered only as centripetal information providers, and not as a way for the community to transmit their local knowledge outside its local and national limits.

As far as the information streams of the radio are concerned, *staff members, U-CMC*, and *U-RC* attribute the same level of importance to the community radio: First, as an inbound information instrument; second, as an instrument to share information among the members of the community; and, finally, as a means with little potential for outbound communication. Non- users break this trend, by giving the same importance to inbound and shared communication flows, while they do not perceive the community radio as an outbound information means. Not surprisingly, non-users do not have any representation of telecenters as information and communication means. Table 4.16 presents the results divided by interviewees' category.

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Interviewees' education level

When considering interviewees by the education level, it is possible to see that people who completed only their *primary* education do not perceive telecenters as information and communication means at all, probably because they do not use computers and the Internet for this purpose. People with a *university* degree, instead, are the ones who mostly consider telecenters as a means to communicate and inform themselves and the others (18.2% of the interviewees belonging to this education level). Moreover, they are the only ones who are able to recognize telecenters' value as outbound information enabler (4.5% of them), while not attributing this value to the community radio at all: this is probably due to the fact that they have more choice, and more means to achieve this goal. Table 4.17 summarizes the results of the analysis, divided by respondents' education level.

Interviewees' age group

No substantial differences were found among interviewees' different age group: People older than 40, the oldest group in the sample, focus on the community radio as information and communication means even more than the others, and do not consider the potential of the telecenter for this aim at all. Table 4.18 shows the discourses distributed by interviewees' age group.

Summary of the results

The results of the analysis presented in this study show how information and communication flows are key subjects within the representations of CMCs in Mozambique. In particular, community radios appear as an essential means to answer information and communication needs of the local communities, while telecenters are still not widely perceived as such. Information and communication related to CMCs community radios are especially connected to inbound streams and to flows that are shared inside community boundaries. Telecenters, on their hand, do not seem to be perceived as enablers of an outbound communication.

The analysis of the different social groups interviewed shows how even staff members are far keener to recognize information and communication flows as related to community radios than to telecenters. Staff members do not seem to perceive the potential of computers and the Internet as means to communicate to an external world.

Local people with a university degree are the ones who mostly consider telecenters as

a means to communicate and inform themselves and the others, and the only ones who are able to recognize telecenters' value as outbound information enablers. Finally, no substantial differences were found among different age groups in interviewees.

4.2.6. Discussion and conclusions

This article presented a quali-quantitative content analysis of 230 interviews to local stakeholders of 10 CMCs around Mozambique. The study investigated local communities' perceptions about *inbound*, *outbound* and *shared within* communities information and communication flows connected to CMCs, and highlighted both that they are identified significantly more as information enablers through their radio component than through their telecenters, and that they are (still) not widely recognized as a means for the communities to actively participate as providers of information at a global level even by local staff members, who have generally more access to the Internet than the rest of the population. On the other hand, CMCs, through their radios, are considered as important communication means to share information within the communities they serve, where they act as social aggregators.

The little worth given to telecenters as information and communication enablers, especially towards the outside of the community, appears unexpected if matched up to the literature documenting the official model of CMCs (Creech, 2006; UNESCO, 2004). The lack of Internet access in CMCs might clearly have influenced their representations by the local people. However, the sample selected for the study reflected the actual situation of Internet access of CMCs in the country. It would be worth investigating how the local communities have reinterpreted the role of CMCs according to a social representations perspective, as they might be perceived to have a different function, such as learning and training catalysts.

Throughout this fieldwork, no particular integration of mobile services in CMCs practices in Mozambique was observed. Yet, mobile phones are a fast-growing technology in Africa. Future research outlook should consider whether and how mobile phones support and change information and communication flows of the communities through CMCs, which uses and affordances they provide, and how local social representations are influenced by this new technology.

It is crucial that funding agencies take into consideration local perspectives and appropriation of CMCs while planning the future of these initiatives. Acknowledging local

representations will guarantee CMCs sustainability, by better embedding them into the social context, and promoting an increased community ownership.

Table 4.14: Interviewees according to their category and age groups

		AgeGroup											
		10 - 19		20 - 29		30 - 39		40 or +		na		Total	
		%	#	%	#	%	#	%	#	%	#	%	#
Category	Staff	9,8%	6	25,5%	25	32,4%	12	43,8%	14	-	-	24,8%	57
	User CMC	59,0%	36	36,7%	36	35,1%	13	21,9%	7	50,0%	1	40,4%	93
	User RC	26,2%	16	35,7%	35	27,0%	10	31,3%	10	50,0%	1	31,3%	72
	Non-User	4,9%	3	2,0%	2	5,4%	2	3,1%	1	-	-	3,5%	8
	Totale	100,0%	61	100,0%	98	100,0%	37	100,0%	32	100,0%	2	100,0%	230

Table 4.15: Interviewees according to their category and education.

		Education												
		No School		Primary		Secondary		High		University		na		Totale	
		%	#	%	#	%	#	%	#	%	#	%	#	%	#
Category	Staff	-	-	6,3%	1	19,1%	21	35,9%	28	27,3%	6	50,0%	1	24,8%	57
	User CMC	-	-	18,8%	3	48,2%	53	38,5%	30	31,8%	7	-	-	40,4%	93
	User RC	100,0%	2	75,0%	12	29,1%	32	24,4%	19	27,3%	6	50,0%	1	31,3%	72
	Non-User	-	-	-	-	2,7%	3	1,3%	1	13,6%	3	-	-	3,5%	8
	Totale	100,0%	2	100,0%	16	100,0%	110	100,0%	78	100,0%	22	100,0%	2	100,0%	230

Table 4.16: Discourses on information and communication flows divided by interviewees' category

	STAFF		U-CMC		U-RC		NON-USERS		TOTAL	
	%	#	%	#	%	#	%	#	%	#
Community Radio	78,9%	45	58,1%	54	54,2%	39	25,0%	2	60,9%	140
Inbound	63,2%	36	43,0%	40	40,3%	29	12,5%	1	46,1%	106
Outbound	7,0%	4	5,4%	5	2,8%	2	0,0%	0	4,8%	11
Shared within	49,1%	28	32,3%	30	27,8%	20	12,5%	1	34,3%	79
Telecentre	5,3%	3	10,8%	10	5,6%	4	-	-	7,4%	17
Inbound	5,3%	3	8,6%	8	5,6%	4	-	-	6,5%	15
Outbound	-	-	1,1%	1	-	-	-	-	0,4%	1
Shared within	-	-	1,1%	1	-	-	-	-	0,4%	1
	100,0%	57	100,0%	93	100,0%	72	100,0%	8	100,0%	230

Table 4.17 – Discourses on information and communication flows divided by interviewees' education level

	Primary		Secondary		High		University		No formal edu.		NA		Total	
	%	#	%	#	%	#	%	#	%	#	%	#	%	#
Community Radio	43,8%	7	60,9%	67	65,4%	51	59,1%	13	-	-	100,0%	2	60,9%	140
Inbound	31,3%	5	45,5%	50	52,6%	41	40,9%	9	-	-	50,0%	1	46,1%	106
Outbound	6,3%	1	2,7%	3	9,0%	7	0,0%	-	-	-	-	-	4,8%	11
Shared within	12,5%	2	34,5%	38	42,3%	33	22,7%	5	-	-	50,0%	1	34,3%	79
Telecentre	-	-	7,3%	8	6,4%	5	18,2%	4	-	-	-	-	7,4%	17
Inbound	-	-	6,4%	7	6,4%	5	13,6%	3	-	-	-	-	6,5%	15
Outbound	-	-	-	-	-	-	4,5%	1	-	-	-	-	0,4%	1
Shared within	-	-	0,9%	1	-	-	-	-	-	-	-	-	0,4%	1
TOT % Interviewees	100,0%	16	100,0%	110	100,0%	78	100,0%	22	100,0%	2	100,0%	2	100,0%	230

Table 4.18: Discourses on information and communication flows divided by interviewees' age group

	na		10 to 19		20 to 29		30 to 39		40 +		Total	
	%	#	%	#	%	#	%	#	%	#	%	#
Community Radio	50,0%	1	52,5%	32	63,3%	62	54,1%	20	78,1%	25	60,9%	140
Inbound	-	-	42,6%	26	46,9%	46	35,1%	13	65,6%	21	46,1%	106
Outbound	-	-	1,6%	1	5,1%	5	5,4%	2	9,4%	3	4,8%	11
Shared within	50,0%	1	21,3%	13	34,7%	34	40,5%	15	50,0%	16	34,3%	79
Telecentre	-	-	11,5%	7	5,1%	5	13,5%	5	-	-	7,4%	17
Inbound	-	-	11,5%	7	4,1%	4	10,8%	4	-	-	6,5%	15
Outbound	-	-	-	-	1,0%	1	-	-	-	-	0,4%	1
Shared within	-	-	-	-	-	-	2,7%	1	-	-	0,4%	1
	100,0%	2	100,0%	61	100,0%	98	100,0%	37	100,0%	32	100,0%	230

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4.3. Using Photo-elicitation to Explore Social Representations of Community Multimedia Centers in Mozambique

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4.3.1. Abstract

Ten Mozambican Community Multimedia Centers (CMCs) were investigated by analyzing Social Representations that users and staff members share of them. Photo-elicitation, an underexplored methodological approach in the domain of Information and Communication for Development (ICT4D), was employed to conduct the study, and a three-step qualitative analysis was performed on both the visual and the discursive data generated. Results tend to confirm and increase 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, for the sole presence of the venue, does not feel left behind. Within this framework, the study also shows that the importance of CMCs is often not related to the newest technology available (only), but to the one that reaches the most of the community. Furthermore, the study 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 contributes to the ICT4D field also by proposing a promising research protocol, which is able to elicit representations otherwise difficult to be accessed.

4.3.2. Introduction

Community Multimedia Centers (CMCs) are one of the numerous answers to provide access to information to all, as well as to reduce the digital and development divides. The model of CMCs (UNESCO, 2004) describes the synergies between 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

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machines, etc.), and a community radio station, broadcasting in local languages and in the official national one, and managed by members of the community where it is located.

In 2003, Mozambique was chosen for a scale-up phase of the CMCs programme, which foresaw the creation of 20 new centers in two years and projected to reach a total of at least 50 later on. The country, which had already seen the appearance of both community radios and telecenters separately at the end of the '90s, 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 taken off the CMCs agenda, recognizing them 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, Vertesi, Dourish, Philip, & Grinter, 2010; Kleine & Unwin, 2009; Tedre et al., 2006).

By adopting the theory of Social Representations (Moscovici, 1961), this work identifies the social construction of meanings around a social object 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, 2010b), its application is still quite unexplored in the ICT4D realm. In particular, this study 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 10 selected centers distributed throughout the country. It employs also two different content analyses: on the visual content of the photos taken by participants as well as on the interviews about those photos.

This research was conducted as part of the broader 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

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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 is funded by the Swiss National Science Foundation (SNSF) and the Swiss Agency for Development and Cooperation (SDC).

4.3.3. Theoretical and Methodological Underpinnings

This section provides a brief outline of the theoretical approach used in the study – social representations theory (section 4.3.3.1) – and introduces the method used for generating the data – photo-elicitation (section 4.3.3.2).

4.3.3.1.   Social Representations

The theory of social representations (Moscovici, 1961) investigates how people understand their world to make sense of it in their everyday lives. The underlying assumption is that interpreting the world is a complex social process that takes place through interpersonal communication and negotiation of meanings among individuals. Social representations 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)

Since their origins, social representations (SR) have not been tied to any specific empirical methodology (Duveen & Lloyd, 1993; Wagner et al., 1999), but rather they have been investigated by using a range of qualitative and quantitative methods, from experimental settings to fieldworks (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, documents 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 are usually aimed to create photo-diaries of specific realities (e.g: the studies of Kessi, 2011; Meda, 2011). The

technique seems to provide promising results in terms of allowing participants to be empowered and have a voice in their own development agenda (Kessi, 2011; Meda, 2011). Most frequently, one can find studies using visual methodologies in order to analyze SR in which researchers select themselves the photos to present to their interviewees (see e.g.:Harcourt, 2006; Sen & Wagner, 2005).

The use of photo is still quite unexplored also in the domain of ICT4D, with few interesting examples (Nemer, 2013; Uimonen, 2013). Section 4.3.3.2 presents photo-elicitation and its potential for the study of shared meanings, especially in the field of Information and Communication Technologies for Development (ICT4D).

4.3.3.2.   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). 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 cases, 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

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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 of photo-elicitation 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 to 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 to 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", for example, reports a photo-ethnographic work conducted in Brazil with a marginalized people in community technology centers (Nemer, 2013). The photographic material, shoot 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 on the agency of art and digital media to speak against corruption and to act as mediators of social change (Uimonen, 2013). 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. These few, and brave, examples suggest 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 of gaining unveiled insights on research outcomes.

4.3.4. Methodology

4.3.4.1.   Data Generation

Ten Mozambican CMCs were selected to conduct the study. 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, they were then interviewed by a team of 5 researchers collaborating on the study. All interviews took place at the CMC's venue.

Interviewees were given a compact digital camera, and asked to take 2 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 shade light on participant's ideas about how a CMC should and should not be. At the same time, the questions were easy to understand and to answer by (almost) any interviewed person. They are also open, so that participants could be free to portray what they really wanted without being guided by the interviewer in that.

Each interviewee was given approximately 2 to 3 minutes to take each photo, which implied that (i) they had to make quick decisions on the subject they wanted to portray; (ii) they could not choose in which moment of the day/week to take their photo; and (iii) they could not go far from the CMC to take it. Participants were asked to show their photo

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(through the camera's LCD screen), and to talk about its content and the reasons why they had portrayed it.

Interviewers did not train their interviewees on how to use the camera, nor on the language of photography, 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 not only their reasons, but also what exactly they wanted to portray. Interviews were digitally recorded, transcribed, and coded. Photos were named according to the 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).

4.3.4.2.   Data Analysis

The whole corpus of data generated was analyzed through three different content analyses (Krippendorff, 2003). Two sets of objects were considered as data: (i) the photos generated (analysis at the level of the image); and (ii) the transcriptions of interviews (analysis at the level of the discourse). In both cases, 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, a photo-taxonomy of the visual material was performed, which allowed to identify 3 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 discourse was performed in two parallel phases, with different methods: one applies a framework taken from online communication, in order to model the different components of a CMC, while the other does a coding of interviews according to 29 main covered thematic areas. Table 4.19 summarizes the different analyses performed on the photo-elicited data and their main outcomes, which are further detailed in the following sections.

Table 4.19: Methods used in the analysis of the data and respective outcomes

Methods	Level of Analysis	Approach	Outcomes
Photo Taxonomy	Visual	Qualitative: Observation and Sorting	3 Broad CMC Spaces, their role and relevant aspects
Application of the OCM framework	Discursive	Qualitative: Top-Down Deductive Interpretation	Interpretation of CMCs perception according to the 4 OCM Pillars
Thematic Analysis	Discursive	Qualitative: Bottom-up Inductive Coding Qualitative: Coding of positive aspects and "reverse-coding" of negative aspects	29 Thematic areas conducing to communities' representation of the ideal CMC

Thanks to this process, the study wanted to answer to the following questions:

- Which component 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 of CMCs is mostly connected to how a CMC should and should not be?

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

Photo Taxonomy

As a first step, the visual data was treated through a content analysis applied to the visual material (Rose, 2007, pp. 59-73). Photos were sorted according to the question they were answering to (i.e.: if they were portraying positive or negative perceptions of CMCs), and 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 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.); finally, pictures labeled as "CMC" were all those ones portraying spaces or objects that belonged either 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 thematic analysis process among the researchers.

Application of the OCM Framework

The second level of analysis consisted in employing a framework for a panoramic exploration of the interview transcriptions. The Framework chosen for this step is derived from the Online Communication Model (OCM), a communication framework used in the field of web analysis and design (Cantoni & Tardini, 2006; Inversini & Cantoni, 2014). The OCM has previously been adopted as interpretational framework to analyze telecenters. In her study of South African telecenters, Rega (2010b) adapted the model, and reckoned telecenters are composed by four pillars. Two regard people: users and managers and two regard objects: contents/services and access infrastructures. The same way, the OCM can describe CMCs as composed by the same four pillars. With this interpretational framework, Rega addressed the necessity of an "integrated approach" as claimed by Townsend and colleagues (2001), according to which PAVs depend not only on the technology they own, but also on the services they are capable of offering and on the demands of their public.

The four pillars of the OCM have been applied as follows:

- Pillar 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 pillar whenever the discourse of 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);

- Pillar 2: Tools and Facilities. This pillar 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 pillar 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);

- Pillar 3: People managing the CMC, i.e. staff. This pillar refers to the director, the trainers, and other staff members who plan, run, and maintain the CMC. Interviews were assigned to this pillar 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)*;

- Pillar 4: People using the venue, i.e. users. Users represent the community and their needs. Interviews were assigned to this pillar when their focus was on them or on the community, 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 pillars, 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 pillars. No interview was assigned to more than 2 pillars. The resulting classification represented an important step to systematize the results of the social representation analysis beyond the specific local peculiarities of the 10 studied CMCs.

Thematic Analysis

The third level of analysis was also performed on the textual data. It consisted in an inductive computer-assisted qualitative data analysis (Krippendorff, 2003) through the software NVivo (version 9.2). The coding yielded 29 themes to emerge. Themes were analyzed across 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. The analysis informed on both staff and users' social representations by considering the positive as well as the negative aspects of CMCs according to the interviewees.

4.3.5. Results

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 (1 staff member and 8 users) refused to take Photo 02, indicating 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 by the interviewee per type was considered. Table 4.20 summarizes the number of photos generated, stratified by interviewee category and photo classification.

Table 4.20: 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
Tot	95	99	194

The following sections present the results of the analysis at both the level of the image (the photos) and the level of the discourse (their related interviews), according to the steps of analysis presented in Table 4.19.

4.3.5.1.   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 4.21 summarizes the results described above.

Table 4.21: 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 4.22 summarizes the content analysis on Photo 02. Figure 4.10 provides 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 4.22: 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

Figure 4.10: 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).

4.3.5.2. *Application of the OCM Framework*

The application of the OCM to interviewees' discourses about Photo 01 revealed that, cumulatively, interviewees report extensively on Services (Pillar 1) and Users (Pillar 4), 34.7% and 33.7% respectively of the aggregated results. Tools and Facilities (Pillar 2) and Staff Members (Pillar 3) follow with 28.7% and 16.8% respectively.

When the data are stratified between users and staff members, differences in ranking the four pillars do emerge. Users speak first about themselves (Pillar 4, 39.6%), then about Tools and Facilities (Pillar 2, 37.7%), followed by Services (Pillar 1) with 34.0% of the references. Least reported are Staff Members (Pillar 3) with 3.8%. On the contrary, staff members speak extensively about Services (Pillar 1) with 37.4%. They put themselves in second position (Pillar 3) with 31.3%, mention Users (Pillar 4) 27.0% of the cases, and Tools and Facilities (Pillar 2) 18.8%. Also, it is interesting to see that most of the mentions to Pillar 2 for Photo 01 made reference to technological objects (tools) 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 Tools and Facilities than staff members did.

This suggests that users see a clear advantage, may it be real or just 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 is more aware and concerned of drawbacks, primary technical failures and maintenance issues, connected to of tools 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 (Pillar 4, 35.1%), then comment on Tools and Facilities (Pillar 2, 32.4%), and considerably less on Services (Pillar 1, 29.7%). Table 4.23 summarizes these results.

Table 4.23: Cross-tabulation of discourses by interviewees' category and gender (Photo 01)

	Staff	User	Male	Female	Total
P1: Services	37.4%	34.0%	37.5%	29.7%	34.7%
P2: Tools & Facilities	18.8%	37.7%	26.6%	32.4%	28.7%
P3: People managing	31.3%	3.8%	17.2%	16.2%	16.8%
P4: 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 Tools and Facilities (Pillar 2). Only 11.8% of the aggregated results point to Services (Pillar 1), and almost no one spoke of Staff Members and Users (Pillars 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 Tools and Facilities (Pillar 2) than females and staff members.

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Table 4.24: Cross-tabulation of images by interviewees' category and gender (Photo 02)

	Staff	Users	Male	Female	Total
P1: Services	17.0%	6.5%	10.2%	14.7%	11.8%
P2: Tools & Facilities	85.1%	91.3%	91.5%	82.4%	88.2%
P3: People managing	2.1%	4.3%	1.7%	5.9%	3.2%
P4: Users	4.3%	0.0%	1.7%	2.9%	2.2%
Total Count	47	46	59	34	93

Given that the absolute majority of discourses regarding how a CMC should improve and should not be were related to Pillar 2, it was decided to further analyze this Pillar through stratifying its results according to its two components: (technological) Tools, 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 pillar (57.9% and 42.1% respectively). Table 4.25 summarizes the above-mentioned results.

Table 4.25: Cross-Tabulation within Pillar 2 per interviewees' typology (Photo 02)

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

Figure 4.11 shows examples from Photo 02 set. Figure 4 was categorized as "Tools and Facilities" (Pillar 2), as the interviewee pointed out at the bad conditions of the walls, which was not suited the CMC. Figure 5 was categorized as "Services", as, even if focusing on technological tools (or their absence), the interviewee pointed out to the missed opportunity to offer the services of a fully operating CMC.

Figure 4.11: Examples of Photo 02. They portray: the external walls of the CMC of Ilha de Moçambique, and missing equipment, again in Ilha de Moçambique.

4.3.5.3.   Thematic Analysis: a bottom-up inductive coding

The last analysis performed inductively identified 29 main themes as emerging from interviewees' discourses. The themes were linked to the three broad spaces – community radio, telecenter and CMC as a whole – portrayed in the photos. Themes 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. Table 4.26 lists the 29 themes identified according to their total frequency in interviewees' discourses. The following paragraphs offer a detailed explanation of the outcomes of the analysis.

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Table 4.26: Themes descriptions including compared percentages for all respondents, and users and staff separately. Themes are ordered by frequency on the total count of interviewees. Adapted from: Aguirre (2012).

Theme	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%

The community radio: social recognition and voice to the voiceless

Most of the coding references about community radio belong to staff members. Staff discourses about radio are significantly related to the themes 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' discourse 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).

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 the opportunity 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). 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 discourse 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. Their main discourses 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.

<p style="text-align:center">The CMC: concerns for comfort, beauty, and financial sustainability</p>

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 themes: 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 themes connected to the financial sustainability of the centers appeared exclusively within staff members' discourses.

Premises of the CMCs were addressed in four main sub-themes: 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 theme is connected to premises that need to be replaced, and it is mainly mentioned by staff members. Users use two more discourses, 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 (Figure 4.12). CMCs should be always clean and tidy, or they are perceived as unhealthy places. Slightly differently, users' idea that disorder and dirt should not be visible and are not worthy of an institution as a CMC, were grouped under the theme 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 4.12: Example of Photo 02 portraying garbage. Location: Chokwe

The group of sub-themes 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's 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 assumption that resources should be made the most of. Finally, financial synergies among the different components of CMCs were mentioned, explaining that different services help to financially sustain one another.

> *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.*

4.3.6. 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 (Moscovici, 1961) – 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 – has become true, 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 capital, 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 physical 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 lower extent, of their 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., 2013a), 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 saying that CMCs should have properly working instruments and premises, connecting the discourse to problems and strategies to sustain them financially. 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, discourses 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.

The methodology employed brought several assets to this research. First, the employment of photos was very inclusive, and permitted to reach participants with different education and age. Second, taking photos helped fostering interviewees' reflection and

uncover different insights if compared to the ones obtained by following a more traditional, semi-structured protocol of interview: the whole topic related to the importance of the aspect of the venues, for example, was not mentioned outside the discussion of the photographs (to this respect, see: Rega et al., 2013). Finally, the method allowed for generating a quantity of data of different nature (both visual and discursive). The different data analysis methods employed permitted to manage the considerable amount of data to make sense of social meanings attributed to CMCs, while allowing a full triangulation.

4.3.7. 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.

The methodology and the theoretical underpinnings at the basis of this study are both quite unexplored in the domain of ICT4D. On the one hand, the theory of social representations confirmed it can be used to address the concern of the relevance for the context in the field (Rega et al., 2013; Vannini et al., 2013b). 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.

Results 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 discourse, 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.

5. Conclusions

This work had three main goals. First, it aimed to offer to ICT4D academics, practitioners and policy makers *fresh insights about Community Multimedia Centres* (CMCs) in Mozambique, a geographic area where to date the phenomenon has been rather underexplored. Second, it proposed to *adopt Social Representations Theory* (SRT), a theoretical framework that is still not widely adopted in ICT4D, and to validate its use in the field (see Chapter 2). In line with the literature that advocates for a stronger attention to cultural and contextual aspects in the design of ICT4D interventions (see Chapter 1), SRT is proposed because it permits to consider different stakeholders' perspectives, including local people's ones. Finally, this work employed and assessed *a novel methodological framework* in ICT4D, both for data generation and for data analysis (see Chapter 3). This includes the use of "photo-elicitation" (Collier, 1967; Harper, 2002) in the interview protocol, consisting in prompting interviewees to take photos and explain them in their interviews.

The research was guided by three main research questions, and different analyses were performed to address them and triangulate results. Outcomes have been presented in three articles included in this work (see Chapter 4), two of them already published in major ICT4D journals and one submitted to another journal. These concluding thoughts will resume the outcomes of the analysis, following the three main research questions that guided the study, thus presenting: (i) the social representations of CMCs in Mozambique according to the different stakeholders and social groups involved in their implementation and ray of action (see section 5.1); (ii) whether SRT is a suitable theoretical paradigm to be employed for advancements in the domain of ICT4D (see section 5.2); and (iii) whether the research strategy chosen within this study is suitable to assess Social Representations in ICT4D (see section 5.3).

Finally, limitations and new directions for this research are discussed (see sections 5.4 and 5.5).

5.1. What are the Social Representations of CMCs in Mozambique according to the different Stakeholders and Social Groups involved in their Implementation and Ray of Action?

The articles proposed in the previous chapter identified that CMCs are complex realities absolving to different functions in their communities, which influence the way local people understand them and negotiate their social representations (Moscovici, 1961). CMCs are important venues for the communities where they operate, and are often referred to as a way to overcome a status of isolation from the rest of the country and the rest of the world.

Their social representations are a combination of *six main clusters of meaning*, which acquire a different degree of importance depending on the relationship interviewees have with CMCs (i.e., the social groups they belong to). Two of these clusters refer to the community radio component (RC) of CMCs, two to the telecenter (TC), one included discourses about the Internet and its benefits, and one presented bureaucratic and administrative aspects connected to the CMC model. Finally, some transversal themes emerges, which are connected to the values conferred to CMCs as socially and personally relevant places for the communities. Figure 5.1 presents an overview on the outcomes described in this section.
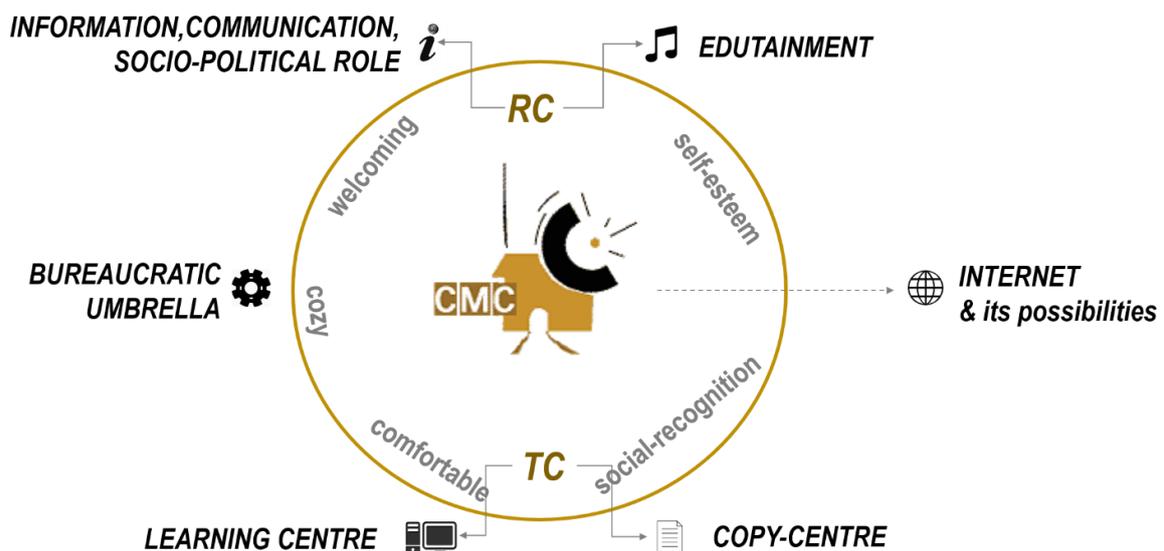

Figure 5.1: Social Representations of CMCs in Mozambique: an overview.

The *community radio* appears as the most pervasive media in the communities. Its importance is shown also in the way people mostly refer to the CMC, calling it "the radio". CMCs' community radios are absolving to two main roles. First, they are means of information and aggregation for the population. They are the ones that answer to the information and communication needs of the locals, while other media are often delayed (in certain cases, newspapers arrive one week later they are printed), inaccessible (in terms of availability and literacy), too costly (not everyone can afford a TV set), or require non-existing infrastructure (radios can work with batteries only, TV cannot). Community radios are spaces where people feel at ease to talk and share locally-relevant information. They act, most of all, as social aggregators within their communities, and as means where it is possible to proactively participate in the life of the community. This topic is connected to the concepts of "good governance" and "giving voice to the voiceless" that the community radio was envisaged to promote (MCT, 2008; Moiana, Chicuecue, Sadique, & Ilal, 2007; UNESCO, 2004). Not surprisingly, given their nature, local radios are not perceived as means for the community to speak out of their geographical boundaries.

Second, community radios are seen as an educative means. Supporting "knowledge for development" in different sectors was one of the main characteristics for which CMCs were created (Creech, 2006). Within the studied CMCs, educational information for children and women seem to be the programs that are most vividly present in local people's utterances, and less notice is given to health, culture and agriculture. Programs for children and women are also the ones where most content is created by the local community.

The function of the radio as an entertainment means is also very valuable for the communities. The official documents presenting the model of CMCs do not stress much this argument. Similarly to what some scholars (in my view, still not enough) argue, the dimension of entertainment and fun of public access venues is very important for its social implications, and because it encourages people to approach and use ICTs (Gómez, 2011; Kleine, 2013; Nemer, 2013; Rega, 2010b; Sey et al., 2013). In the case of social representations of Mozambican CMCs, though, this dimension was found only in relationship to the community radio component, and not to the telecentre.

CMCs' *telecentres* are perceived as having two main roles: they are computer training venues and places where to fulfil practical daily needs such as taking photocopies and printing typed documents. If compared against the benefits of telecentres theorised in the

previous literature, CMCs' telecentres in Mozambique seem to be used to a lesser extent. First, they are not perceived as places to access information, which is not aligned with the purpose initiating agencies designed them for (see: Creech, 2006; UNESCO, 2004). Such role is covered by the community radio only. Little importance is given to telecentres also as communication enablers for the communities where they operate, not even to communicate towards the outside of the community. This is in contrast with the uses observed by the final report of the Global Impact Study (Sey et al., 2013).

Inferentially, it is possible to argue that the representation of development that emerges from this clustering is not operationalized through CMCs the same way that initiating agencies designed. CMCs are indeed perceived as development enablers and symbols within the communities. However, when speaking about the benefits of CMCs, communities referred only scarcely to some areas of development that, according to initiating agencies, should have been essential to local development (i.e.: health, agriculture, e-Government services). Interviewees focused their reasoning much more on the value of community radios as social aggregators, and telecenters as providers of vary basic services and computer courses, useful to get a certification and, consequently, the possibility of a better job in the future.

The lack of Internet access and the scarcity of available computers for public access in CMCs might clearly have influenced their representations by local people. Telecentres were presented to community members as access points to information, but the venues do not seem to fulfil locals' expectations in this sense. Discourses about the Internet and its benefits seem to describe mostly a hypothetical, rather than a first-hand experience with it. This is, again, in contradiction with the original design of CMCs' telecentres, which were foreseen to offer "access to the Internet and other ICTs" (Creech, 2006, p.6) as its first characteristic.

Another aspect that is rather neglected by initiating agencies, but crucial in local people's representations of CMCs, is the importance of the physical appearance of the venues. When they are not focused on implementing new venues, funding agencies' discourses are usually more concerned with the conditions of technologies and the development of services. These are, indeed, important aspects for the venues, and concern of them is shared, to a certain extent, by CMCs' staff members. However, local stakeholders seem very concerned with CMCs' appearance, cleanliness, and order. Physical conditions of

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CMCs should be worth of their importance as community-relevant centres, and they should be welcoming, comfortable, and clean, coherently with the values they transmit. These outcomes are partly in line with recent studies about the influence of the "cool factor" (Gómez & Gould, 2010; Gómez, 2011) in accessing PAVs, made attractive by a set of subjective perceptions that include friendly and reliable operators, the presence of a comfortable space allowing social interaction, and the need to stress ludic and entertaining activities even for development purposes (Chirumamilla & Pal, 2013; De Moor & Van Den Assem, 2013). According to the authors, the concepts of "coolness" and entertainment, and their influence in social groups' access and interaction with PAVs is still very little considered by the academic literature, and certainly needs to be further investigated.

Yet, premises should be also functional and functioning, which is often connected to the idea of financially sustaining CMCs and people working there. While the idea that CMCs should continue receiving financial help by external sources is still deep-rooted in local staff's accounts, the perspective that CMCs should strive to find their own revenues and make the most out of all their resources is emerging. These outcomes feed the debate of the many studies discussing models of sustainability for telecentres (see Chapter 1; see also Best & Kumar, 2008; Best, Thakur, & Kolko, 2010; Kleine, 2013; Kuriyan & Toyama, 2007; Rao, 2008).

A final aspect emerging from CMCs social representations is how much these centres are valued because of the social recognition they bring to staff members, who gain self-confidence, work experience, and feel they are doing something good for their own community. Users also gain personal benefits from CMCs, as the training they receive there make them better equipped to find a job. This result is in line with the literature discussing the so-called "aspirational value" connected to technology (see section 4.3; see also Frix, Freistadt, Neff, & Pal, 2009; Pal, Lakshmanan, & Toyama, 2009; Pal, 2012; Ray & Kuriyan, 2010).

The outcomes of this research were presented to the directors of the CMCs involved in the research and to local researchers and practitioners in ICT4D working in Mozambique during two workshops held in Maputo in April 2012 and February 2014.

5.2. Is Social Representations a suitable Theoretical Paradigm to be employed for Advancements in the Domain of ICT4D?

SRT was employed to address and operationalize the "design-reality gap" (Heeks, 2002) problematized in the literature, i.e. the lack of contextualization and local involvement in ICT4D projects, in particular in those that are designed as "off-the-shelf" solutions to be implemented in different developing countries, and which do not keep into consideration cultural and contextual issues of the social groups they should benefit. When the gap is created, ICT4D projects are not socially sustainable and very likely to fail (see Chapter 1).

As a "theory of change" (Markovà, 2003), Social Representations Theory (SRT) argues that social phenomena are not fixed: they are constantly negotiated and pass through different phases (Maury, 2007), allowing for diachronic changes (see Chapter 2). Social representations are, then, particularly interesting for initiating agents and designers of ICT4D projects, as they allow both to consider local perspectives and include contextual elements, and to monitor representations of social objects or interventions over time. This could permit initiating agencies to evaluate ICT4D projects and intervene before it is too expensive (or too late) to adjust them. Phases of negotiations of social representations are particularly interesting in cases where social phenomena are not deployed locally but imported from the outside, such as ICT4D interventions in developing countries (see Chapter 2).

The analyses presented in the research show how local actors, through their discourses, attributes, and anchoring strategies, are in the process of accommodating CMCs into their "consensual" (common sense, non-institutional) (Moscovici, 1961) universes of practices and values shared within their communities. This is a positive outcome, which suggests that the first step toward local ownership and "re-invention" (Rogers, 1962) of CMCs is being undertaken, and communities are adapting and appropriating CMCs to their needs.

For these reasons, it is possible to consider the theory as a suitable framework to operationalize the theorised "design-reality gap", and to permit advancements in the domain of ICT4D.

5.3. Is the research strategy chosen within this study suitable in order to assess Social Representations in ICT4D?

The research employed a mixed method methodology, which consisted in the use of qualitative data generation methods and both qualitative and quantitative methods of analysis. Mixed methods research was chosen to provide more holistic evidence than either quantitative or qualitative research alone, to generalise outcomes of the research at the level of the country, and because mixed methods was theorised to be particularly suitable for the studies of social representations (see Chapters 2 and 3).

Different methods of data generation and data analysis were employed. On the one hand, semi-structured interviews were paired to photo-elicitation in the field, in order to gain more insight on the phenomena and uncover elements possibly not accessible otherwise by researchers for different reasons (such as power dynamics, fulfilling of expectations, and cultural differences). On the other hand, social representations were analysed with a combination of content analyses and co-occurrences analyses, so to allow to triangulate and go more in depth into data. All together, the methods employed permitted to show social representations' hermeneutics value for an ICT4D context, by giving different insights on the studied social phenomenon.

A particular focus on photo-elicitation permitted to test the method and show it is a promising one for research in ICT4D: employing photos was very inclusive and empowering for participants, it fostered interviewees' reflection, it allowed to bridge culturally distant realities, and it generated a considerable quantity of data of different nature (both visual and discursive).

5.4. Limitations of the research

Throughout this work, I made the case for the use of approaches in ICT4D research that include contextual realities and local actors in its design. In particular, I attempted to validate the use of social representations as a suitable theory for the domain, and to propose a viable methodology that could both grab the complexity of the local contexts, and speak for the situation of the country at the same time. To do so, I did an extensive research in the field and within the existing corpus of literature. Overall, the theoretical and methodological

frameworks employed generated valuable outcomes, which can inform academics, as well as practitioners and policy makers in the field.

However, this research presents some limitations, which can be grouped in three different topics. First, the limits related to the *development of the field work*: the time I spent in the field (one month and a half to conduct the interviews I used for this study, and another month the next year) seemed reasonable in its totality, but it was not very much if we consider the time really spent in each of the CMCs venues visited (three days in each case). Ten centres scattered all over the country are many, and much time (and money!) was consumed traveling from one place to the other, and organising transfers. While I feel very lucky that I was able to visit all the centres involved, and that I gained a considerable amount of knowledge visiting the centres and observing their activities just for a few days, I believe the interpretive side of this research would have benefitted from longer visits and more time spent only to conduct participant observations (at least one week per centre). Good enough, the Mozambican members of the team helped me with their insights, and enriched my vision with theirs. Furthermore, during the data generation and data analysis phases, I tried to abstain from intervening with my own views and let the interviewees, and the data, talk as much as possible (see Chapter 3). I don't think that data obtained can be considered completely unbiased, even only for the fact that I, as a white woman in a Sub-Saharan African country, was probably perceived as a possible donor, whom interviewees wanted to please, and so were my colleagues from the Swiss team of the project. My Mozambican colleagues, who also conducted the interviews, had different issues, but were nevertheless perceived in some cases as "important people" coming from the city, who also had the power to help and donate. This may have influenced the data in different ways, both fostering and hindering a relationship of trust.

Second, this research presents some limits in terms of the *methodology* used. The photo-elicitation protocol used for data generation was an effort to employ this methodology in the field of ICT4D and, because of its novelty, it presented several challenges. One of the three questions done during the interviews, for instance, resulted to be too complicated or too abstract by the interviewees and, overall, the use of metaphors via images was perceived as an uneasy task by the majority of participants. While promising interesting results, further reflection on the topic is needed to improve the method for ICT4D research. Data generation and analysis performed wanted to be participative and let as much as possible local people

"talk". Data analysis could have included more participatory methods of interpretation of data. An attempt was done in this sense, by making CMCs directors discuss about the photographic material during the first workshop organised in Maputo for data dissemination in April 2012. Their insights were partially considered in the final analysis presented in section 4.3.

Finally, the *time required* for data generation and analysis performed during this work is rather long to be easily operationalized and employed in ICT4D project design, especially if the study of social representations is not the focal point of the research. Further efforts should be made in order to make the methodology more usable in this sense.

5.5. Future lines of work

This study opened up many new directions of research, which are hoped to improve the approach proposed in this work and further its outcomes: first, some of the outcomes presented by this work are still not much investigated and need to be further explored. These include investigating the impact of *the "cool" factor* (Gómez & Gould, 2010; Gómez, 2011) and the value of *the dimension of leisure* for telecentres and public access venues, which I think will be key factors for the success of both public access to ICTs and ICTs skills development in the future, especially in developing regions.

Second, the particular study of social representations on CMCs in Mozambique should be extended to include *a diachronic dimension*, and to monitor how social meaning related to CMCs are negotiated over time. This could help initiating agencies in charge of the programme to better plan their own interventions and the future directions of universal access policies in the country. At the same time, and for the same reasons, it is recommended to explore the way other kinds of PAVs (e.g. cybercafés, libraries, etc.) shape th*e ecosystem of public access* in Mozambique, and explore how private mobile access is changing or reshaping it. CMCs are not islands, and many of the places that were nothing more than remote villages when their CMC appeared have grown considerably in the last few years, even since the field work was conducted. This growth meant that other venues offering similar services as CMCs are appearing. While these venues are seen by many CMCs as competitors, the fact also suggests that the services CMCs offer are more and more requested (see: Vannini, Rega, Sala, & Cantoni, 2013a; 2013b).

Third, further efforts should be made to improve the *photo-elicitation strategy protocol*. The method is promising, and provided insights on phenomena not easily achievable otherwise. Different data generation procedures and data analysis techniques should be explored in ICT4D circumstances and compared with the methodology proposed within this work.

Fourth, *faster methods* for social representations data generation and analysis are hoped to be explored. After this study validated the use of the theory within the domain of ICT4D, other methods employed in social representations should be adopted. One example is Abric's structural model, or model of the "central" and "peripheral" systems of social representations (Abric, 1994), which could be employed by statistically analysing free associations of words.

Finally, the study of social representations in ICT4D was meant to be *practice-oriented* and to address a gap in *design* procedures, establishing strategies by which social representations can effectively give voice to local social groups (or rebalance them) in ICTs for development interventions. Even if this was not within the specific scope of this research, I have started to explore the possibilities of the use of social representations in this sense, and presented them in three conference venues:

1. SRT was used for their value in co-design (Sanders & Stappers, 2008). In this case, social representations outcomes were used to identify projects to improve CMCs conditions (so-called "improvement actions"), as for the second part of the project RE-ACT (see: David, Vannini, Rega, & Cantoni, 2013; David, Vannini, & Sabiescu, 2013);

2. SRT was used within a "design-based research" perspective (Design Based Research Collaborative., 2003; McKenney & Akker, 2005). The approach was intended to include a further instrument of agency into participatory projects, which could: (i) comprise even more local voices in iterative cycles of design; (ii) make design participants reflect on grassroots perceptions of the project at stake; and (iii) serve as a complementary perspective in which "endogenized meanings" (Sassen, 2012) are given impetus (see: Van Zyl & Vannini, 2013);

3. Data generated within a social representations framework were employed as inputs for the creation of "personas" (Cooper, 2004), used as a tool to capture

the complexity of the qualitative data generated, visualize them in association with socio-demographic characteristics, and communicate research outcomes in an action-oriented format. As personas were created on the basis of "real data" (interviews and photos), which was generated in collaboration with local people, the resulting narrative presented a reduced risk of falling in stereotypes and pre-conception (see: Aguirre, Vannini, Rega, & Cantoni, 2013).

However, these studies are still at their initial phases, and further research is needed to establish a protocol for which social representations could be included within practice- and design-oriented research in ICT4D, and to assess their usefulness.

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Annex 1: Interview Protocol

Action Protocol:

First part: Photo Voice (only with staff and users)

Second Part: Interview

Each picture must be renamed before storage. The name of the picture will be:

Place_CategoryNumber_PicNumber_Date(YYYY/MM/DD)_Interviewer

Ex: Ilha_User1_Pic1_20110315_Gertrudes

Each Interview registration must start with:

Date – Place – Category – Number – Interviewer

Ex: 25 Janeiro 2011, Ilha, User number 1, por Sara

The mp3 files must be renamed before storage. The naming label of the files must follow this rule:

Place – CategoryNumber – Date (YYYY/MM/DD) – Interviewer

Ex: Ilha_NonUser3_20110315_Gertrudes

Categories and number of interviews:

- *1 representatives of initiating agencies (InitiatingAgency)*
- *10 local staff, both paid staff and volunteers (Staff) – different roles*
- *10 users (User)*
- *10 non-users (Non-User)*

Check also:

- opening times
- costs of the services
- radio languages
- services they have
- number of computers
- operating systems and programs in the computers

Apresentação e explicação dos objetivos da pesquisa; confidencialidade; 1 hr entrevista; fita.

Identificação do entrevistado

Primeiro, gostaria de lhe fazer algumas perguntas sobre si e o seu trabalho no ….

Qual é o seu nome?

Qual a sua ocupação, que cargo ocupa?

Pode descrever-me o que faz no seu cargo?

Identidade: estrutura, história e objetivos do CMC

Gostaria de saber como o sr(a) entende o CMC como um todo.

Poderia falar sobre as origens e os objetivos da iniciativa do CMC?

Quais são as componentes/partes do CMC?

(Quais são as vantagens de colocar essas componentes juntas?)

Poderia falar sobre a estrutura organizacional do CMC?

Poderia, por favor, desenhá-la? Ou fazer o organigrama?

Sobre as pessoas internamente

Quem são as pessoas envolvidas na gestão e organização dos CMCs?

Trata-se na sua maioria de Voluntários ou Pessoas Pagas?

Eles são normalmente pessoas pertencentes as comunidades onde os CMCs estão localizados?

Qual é o critério de seleção do pessoal que trabalha nos CMCs? Qual é o nível de escolaridade deles?

Recebem alguma formação? **Se sim**, qual é a formação ministrada aos funcionários e aos membros das organizações gestoras dos CMCs?

Esta formação é centralizada de alguma forma? / é controlada ou organizada por alguma organização?

Visitantes dos CMC

Poderia dizer quem são as pessoas nas comunidades que usam os CMCs?

O sr(a) sabe o que é que elas, fazem ou procuram nos CMCs?

O sr(a) sabe por que as pessoas geralmente visitam/vão aos CMCs?

E as pessoas das comunidades que não vão, O sr(a) sabe dizer porque eles não vão aos CMCs?

O sr(a) conhece algum caso de sucesso de uso dos CMCs? (Sucesso em termos de boa utilização pela comunidade local)

Serviços oferecidos pelos CMCs

Agora gostaria de falar sobre os serviços oferecidos pelo CMC.

Quais são os serviços oferecidos pelos CMCs?

Existem outros serviços?

Que serviços acha que são os mais utilizados pelos usuários?

Em sua opinião, quais são os serviços que, normalmente, funcionam bem?

Existem serviços que poderiam ser melhorados? Se houver, como poderiam ser melhorados?

Existem outros serviços que o sr(a) gostaria que os CMCs oferecessem? Poderia dar alguns exemplos?

Que tipos de formação oferecem os CMCs para as comunidades?

CMCs e Comunidades

Agora gostaria de saber como os CMCs se integram nas comunidades.

Como os serviços oferecidos pelos CMCs refletem as necessidades das comunidades em que estão?   Quais são as necessidades que atendem ou satisfazem?

Como refletem o que as comunidades pedem?

Como é que comunidades contribuem para os CMCs em termos de organização e ideias? Poderia dar alguns exemplos?

Sabe por que as pessoas vão para os CMCs? Por que eles usam os telecentros? Por que razões escutam as rádios comunitárias?

O sr(a) acha que os CMCs poderiam fazer outras coisas e actividades para melhorar a vida das comunidades? **Se sim**: Qual? Como? Poderia dar alguns exemplos?

Percepção sobre os CMCs

Agora gostaria de saber algo mais sobre como o sr(a) e outras pessoas percebem os CMCs.

Se um amigo seu lhe pedisse para explicar o que é um CMC, o que o sr(a) responderia?

Se um amigo seu lhe pedisse para explicar o que é uma rádio comunitária, o que o sr(a) responderia?

Se um amigo seu pedisse para explicar o que é um telecentro, o que o sr(a) responderia?

Se um amigo seu perguntasse o que é um computador, o que o sr(a) responderia?

Se um amigo seu lhe perguntasse o que é a Internet, o que o sr(a) responderia?

Moçambique era diferente antes dos CMCs existirem? Como?

O sr(a) acha que outras vilas e distritos que não têm CMCs têm necessidade de te-los? Por quê?

Como é que os CMCs promovem a inovação em Moçambique / nas comunidades emque estão localizados? Os CMCs, são eles próprios uma inovação? Por quê?

Identidade: benchmark, os ritos, os modelos e os planos futuros dos CMCs

Existem outros locais públicos em Moçambique, onde as pessoas podem ter acesso aos computadores e a internet?

Se sim: Quais? Eles são diferentes dos CMCs? Em que é que são diferentes?

Na sua opinião, em que aspetos os CMCs são fortes? Quais são as componentes que funcionam realmente bem nos CMCs?

O sr(a) poderia dizer algo sobre planos futuros para os CMCs? Como é que o novo modelo do CMC difere do antigo? Por quê?

Quais são as razões pelas quais um novo modelo foi concebido? Por que foi concebido dessa forma?

Como é que a nova estrutura do CMC apoia melhor as atividades dos CMCs? O sr(a) poderia dar um exemplo?

Na sua opinião, existe alguma coisa que os CMCs poderiam melhorar? **Se sim**: Qual? Como? O sr(a) poderia dar algum exemplo de como o sr(a) melhoraria isso?

Essas melhorias fazem parte do novo modelo de CMC? Como?

Terminamos a entrevista: Existe alguma coisa que o sr(a) gostaria de acrescentar?

Photo-Voice

O que o sr(a) gosta deste lugar? Tome uma foto que retrata as coisas que o sr(a) gosta sobre este lugar.

- O que o sr(a) fotografou? O sr(a) pode me dizer o que esta imagem representa?
- O que está na foto? Por que representa o que o sr(a) gosta*?*
- Para o sr(a), o quão importante é essa coisa para este lugar?
- Pense nas pessoas que vêm aqui. Quantos deles o sr(a) acha que apreciam esta coisa?

Também estamos interessados em as deficiências e desvantagens deste lugar. Tire 1 foto que retrata uma sugestão para melhorar este lugar.

- O que o sr(a) fotografou? O sr(a) pode me dizer o que esta imagem representa?
- O que está na foto? Por que representa o que o sr(a) não gosta?
- Para o sr(a), qual a importância desta sugestão para este lugar?
- Pense nas outras pessoas que usam este espaço. Quantos deles o sr(a) acha que concordam com a sua sugestão?

Que é, que representa este lugar para o sr(a)? Tome uma foto que retrata o que este lugar é para si.

- O que o sr(a) fotografou? O que está na foto? O sr(a) pode me dizer o que esta imagem representa?
- Para o sr(a), o quão importante é essa coisa na sua vida?

Apresentação e explicação dos objectivos da pesquisa; confidencialidade; 1 hr. entrevista; fita.

Identificação do entrevistado

Primeiro, gostaria de lhe fazer algumas perguntas sobre você para ter uma idéia sobre as características do pessoal deste lugar.

Qual é o seu nome?

Quantos anos o sr(a) tem?

Qual é o seu nível de escolaridade? Qual é o seu trabalho / ocupação principal?

Que idiomas/linguas o sr(a) fala?

Experiência no CMC

Agora gostaria de lhe perguntar sobre suas experiências neste lugar.

Qual é o seu trabalho aqui? Quais são as suas responsabilidades? Quais são as suas atividades?

Há quanto tempo o sr(a) trabalha aqui? Com que funções?

Por que o sr(a) decidiu trabalhar aqui? Qual é o valor acrescentado de trabalhar aqui para o sr(a)?

O sr(a) tem salario para o seu trabalho aqui?

Quando o sr(a) veio aqui pela primeira vez? Por que o sr(a) decidiu vir para cá?

Como o sr(a) ficou a conhecer este lugar?

O sr(a) usa o lugar como este também é usuário? (Parte do telecentro)

Se sim: O que o sr(a) faz no telecentro?

O sr(a) usa algum serviço? Quais? Para fazer o quê?

Como o sr(a) fezia as mesmas coisas antes de vir aqui / quando o sr(a) não sabia deste lugar?

Onde o sr(a) aprendeu a usar computadores e a Internet?

Identidade: história, estrutura, metas do CMC

Gostaria de saber algo mais sobre como o sr(a) entende esse lugar como um todo e como ele está organizado.

O que o sr(a) sabe sobre a história deste lugar?

Como é chamado esse lugar? Por que é chamado assim?

Qual é o propósito deste lugar? É útil para a comunidade? Para quê?

Por favor pode explicar/falar sobre a estrutura organizacional deste lugar/ como este lugar é organizado em termos de pessoas e funções. Podemos desenha-lo juntos?

Quais são as funções das pessoas que trabalham aqui?

Sobre as pessoas internamente ao CMC

Quantas pessoas trabalham aqui (ambos assalariados e voluntários)?

Quem são eles? (Aberto a tudo o que quer responder, se não entender a questão, podemos perguntar os nomes e se eles são pessoas importantes da comunidade)

Quantos homens e quantas mulheres? Que tipo de compromisso é que eles têm com este lugar (assalariados / voluntários)?

São pessoas da comunidade ou elas vêm de fora?

Vocês realizam reuniões juntos? **Se sim**, quem organiza as reuniões? Quem participa nas reuniões? Quantas vezes vocês realizam as reuniões (periodicidade)

O sr(a) já recebeu algum treinamento para trabalhar aqui? O quê?

Com que frequência o sr(a) recebe/recebeu treino?

Visitantes do CMC

Quantas pessoas vêm a este lugar por dia?

Quem são as pessoas que vem aqui (deixá-la aberta, se eles pedirem, diga que o sr(a) quer saber se eles são pessoas que conhecem / amigos...)

Quais são as suas ocupações? Sexo? Idade?

São pessoas da comunidade?

A sua família, seus amigos, seus colegas, pessoas da mesma igreja... usam os serviços deste lugar?

Como é que as pessoas sabem da existência deste lugar?

O sr(a) sabe o que as pessoas vêm fazer aqui? **Se sim**: o que eles fazem? O sr(a) sabe com que frequência eles vêm? E quanto tempo eles ficam aqui?

O sr(a) sabe por que as pessoas vêm a este lugar, em vez de ir para outros lugares?

E para as pessoas da comunidade que não vem, você sabe por que eles não vêm?

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Pode fazer alguns comentários bons sobre as pessoas que vêm a este lugar? / Casos em que o sr(a) acha que as pessoas estão a fazer bom uso do CMC?

Serviços oferecidos pelo CMC

Agora eu gostaria de lhe perguntar algo sobre os serviços oferecidos aqui.

Quais são os serviços oferecidos aqui? Existem outros serviços?

Quantos computadores têm este lugar? Quantos deles funcionam?

É a conexão com a Internet funciona?

Quais são os serviços mais utilizados pelos usuários?

Em sua opinião, quais são os serviços que funcionam bem?

Existem serviços que poderiam ser melhorados? **Se houver**, como eles poderiam ser melhorados?

Existem outros serviços que o sr(a) gostaria que este local oferece-se? O sr(a) poderia dar algum exemplo?

Vocês oferecem treinamento para a comunidade? O quê? Com que frequência?

As pessoas das comunidades participam dos programas de rádio? **Se sim**, como? O sr(a) poderia dar algum exemplo?

CMC e Comunidade

Agora gostaria de saber como este lugar se integra na sua comunidade.

Quem são as pessoas que conhecem este lugar? Quem são aqueles que o utilizam?

Como as pessoas da comunidade chamam este lugar?

O que eles sabem sobre este lugar? (Eles sabem sobre a rádio? Eles sabem sobre o TC?)

Quais são as principais atividades econômicas da comunidade? O que faz o CMC para a melhoria das atividades econômicas da comunidade? O qué?

Quão essas atividades são importantes para a comunidade?

O sr(a) acha que este lugar poderia fazer outras coisas para a comunidade? **Se sim**, quais? Poderia dar alguns exemplos?

O sr(a) sabe se as pessoas da comunidade ouvem a rádio comunitária? Porque elas ouvem a radio comunitária?

Eles participam dos programas da rádio? Como?

Percepção sobre o CMC

Agora eu gostaria de saber algo mais sobre como você e outras pessoas percebem este lugar.

Se um amigo seu lhe pedisse para explicar o que este lugar é, o que o/a sr(a) responderia?

Se um amigo seu pedisse para explicar o que é uma rádio comunitária, o que o/a sr(a) responderia?

Se um amigo seu pedisse para explicar o que é um telecentro, o que o/a sr(a) responderia?

Se um amigo seu perguntasse o que é um computador, o que o/a sr(a) responderia?

Se um amigo seu perguntasse o que é a Internet, o que o/a sr(a) responderia?

O distrito era diferente antes deste lugar existir? O que mudou? (Mesmo com TC e rádio em separado, se ele não mencioná-los).

Identidade: benchmark, os ritos, os modelos e os planos futuros do CMC

Existem outros lugares onde é possível o acesso a computadores e à Internet?

Em caso afirmativo: Onde? Como são eles? Em que eles são diferentes deste?

As pessoas da comunidade vão para lá? Por quê?

O sr(a) vai lá também? Por quê?

Na sua opinião, em que aspetos é que este lugar é forte? Quais são as coisas que funcionam realmente bem aqui?

Em vez disso, há algo neste lugar que poderia / deveria ser melhorado na sua opinião? **Se sim**: O que exatamente? Como poderia ser melhorado? O sr(a) poderia dar algum exemplo?

O sr(a) conhece outros lugares como este no país? **Se sim**: Este lugar é conectado/tem ligação com eles?

Se sim: Como? Vocês fazem algo juntos? **Se sim**: O qué?

Exposição aos meios de comunicação

Gostaria de saber como as informações são trocadas em sua comunidade.

Geralmente, como o sr(a) sabe sobre notícias e acontecimentos? A partir de que meios? Critérios?

O sr(a) assiste televisão? Onde?

Quantas vezes / tempo o sr(a) assiste?

Quais são os canais? Quais os programas?

O sr(a) tem um rádio? O sr(a) escuta a ele (em geral)? Onde?

Com que frequência o sr(a) escutá-la/lo?

Quais são os programas de rádio que o sr(a) ouve?

O sr(a) escuta a Rádio Comunitária? Para que programas?

O sr(a) lê os jornais? Quais? Onde?

Que tipo de artigos o sr(a) lê?

O sr(a) tem acesso a um computador e à Internet a partir de outros locais, para além do telecentro? Onde?

Tem uma linha de telefone fixo?

O sr(a) tem um celular?

Com quem o sr(a) se comunica através do telefone / celular?

Para que o sr(a) usa o seu telefone celular principalmente?

Terminamos a entrevista: Existe alguma coisa que o sr(a) gostaria de acrescentar?

Photo-Voice

O que o sr(a) gosta deste lugar? Tome uma foto que retrata as coisas que o sr(a) gosta sobre este lugar.

- O que o sr(a) fotografou? O sr(a) pode me dizer o que esta imagem representa?
- O que está na foto? Por que representa o que o sr(a) gosta*?
- Para o sr(a), o quão importante é essa coisa para este lugar?
- Pense nas pessoas que vêm aqui. Quantos deles o sr(a) acha que apreciam esta coisa?

Também estamos interessados em as deficiências e desvantagens deste lugar. Tire 1 foto que retrata uma sugestão para melhorar este lugar.

- O que o sr(a) fotografou? O sr(a) pode me dizer o que esta imagem representa?
- O que está na foto? Por que representa o que o sr(a) não gosta?
- Para o sr(a), qual a importância desta sugestão para este lugar?
- Pense nas outras pessoas que usam este espaço. Quantos deles o sr(a) acha que concordam com a sua sugestão?

Que é, que representa este lugar para o sr(a)? Tome uma foto que retrata o que este lugar é para si.

- O que o sr(a) fotografou? O que está na foto? O sr(a) pode me dizer o que esta imagem representa?
- Para o sr(a), o quão importante é essa coisa na sua vida?

Apresentação e explicação dos objectivos da pesquisa; confidencialidade; 1 hr. entrevista; fita.

Identificação do entrevistado

Primeiro, gostaria de lhe fazer algumas perguntas sobre si.

Qual é seu nome?

Quantos anos o sr(a) tem?

Qual é o seu nível de escolaridade?

Qual é o seu trabalho / ocupação principal?

Que idiomas/linguas o sr(a) fala?

Experiência no CMC

Agora eu gostaria de lhe perguntar sobre a sua experiência neste lugar.

Quantas vezes o sr(a) vem aqui?

 O que o sr(a) faz quando você vem aqui?

Quanto tempo o sr(a) fica aqui normalmente?

Quando foi a primera vez que o sr(a) veio aqui?

Como o sr(a) ficou saber deste lugar?

Por que o sr(a) decidiu vir?

Como o sr(a) fezia as mesmas coisas antes de vir aqui?

Você também ouve a Rádio Comunitária?

Quando o sr(a) a ouve? Quanto tempo? Com que frequência?

Que tipo de programa o sr(a) gosta de ouvir na Radio Comunitaria?

Visitantes do CMC

As outras pessoas que vêm aqui são pessoas da comunidade?

Quem são eles (deixá-la aberta, se eles pedirem, diga que o sr(a) quer saber se eles são pessoas que conhecem / amigos ...)

São mais homens, mulheres? Que ocupação tem? Que idade tem?

A sua família, seus amigos, seus colegas, pessoas da mesma igreja ... usam serviços deste lugar?

Como é que as pessoas sabem deste lugar?

Você sabe o que as outras pessoas vêm fazer aqui? Se sim: o que eles fazem?

Você sabe por que as pessoas vêm a este CMC, em vez de ir para outros lugares?

E, como para as pessoas da comunidade que não vão, o sr(a) sabe por que eles não vão?

Serviços oferecidos pelo CMC

Agora eu gostaria de lhe perguntar algo sobre os serviços oferecidos por este lugar.

Quais são os serviços que o sr(a) utiliza aqui? Qué mais?

Você sabe se aqui se oferecem outros serviços? Quais?

Quais são os serviços que o sr(a) gosta?

Existem serviços que o sr(a) não gosta? Se houver, quais? Por quê?

Existem outros serviços que o sr(a) gostaria que esse local oferece-se? Você poderia me dar algum exemplo?

O sr(a) recebeu alguma formação aqui? O quê? Por quanto tempo?

O sr(a) vai participar de outras formações aqui?

Onde o sr(a) aprendeu a usar o computador e a internet?

CMC e Comunidade

Agora gostaria de saber como este lugar se integra na sua comunidade.

Há muitas pessoas na comunidade que sabem deste lugar?

Quem são as pessoas que sabem deste lugar? Quem são aqueles que o utilizam?

A sua família, seus amigos, seus colegas, pessoas da mesma igreja, etc…. utilizam este lugar?

O sr(a) sabe o que os usuários / as pessoas fazem aqui?

O sr(a) sabe por que eles vêm aqui?

As pessoas da comunidade, como é que eles chamam este lugar?

O que eles sabem sobre este lugar? (Será que eles sabem sobre a rádio? Será que eles sabem sobre o TC?)

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Este lugar é importante para a comunidade? Por quê? Por que não? O sr(a) pode dar alguns exemplos?

O sr(a) acha que seria possível fazer outras coisas (mais coisas das que já se fazem) aqui? Se sim, quais? Poderia dar alguns exemplos?

(O sr(a) sabe se as pessoas da comunidade ouvem a rádio comunitária? Porque eles ouvem a radio comunitária?)

(Eles participam dos programas de rádio? Como?)

Perceção sobre o CMC

Agora eu gostaria de saber algo mais sobre a sua perceção sobre este lugar.

Se um amigo seu pedisse para explicar o que este lugar é, o que o/a sr(a) responderia?

Se um amigo seu lhe pedisse para explicar o que é uma rádio comunitária, o que o/a sr(a) responderia?

Se um amigo seu pedisse para explicar o que é um telecentro, o que o/a sr(a) responderia?

Se um amigo seu perguntasse o que é um computador, o que o/a sr(a) responderia?

Se um amigo seu perguntasse o que é a Internet, o que o/a sr(a) responderia?

O distrito era diferente antes (que) esse lugar existisse? O que mudou? (Mesmo com TC e rádio em separado, se ele não mencioná-los).

Identidade: benchmark, os direitos, os modelos e os planos futuros do CMC

Existem outros lugares onde é possível ter acesso aos computadores e à Internet?

Se respondeu sim: O sr(a) vai lá? Se sim: Para fazer o quê? Eles são diferentes deste? De que maneira?

Na sua opinião, quais são as coisas em que este lugar é forte? Quais são as coisas que funcionam realmente bem aqui?

Em vez disso, há algo neste lugar que poderia ser melhorado na sua opinião? Se sim: O que exatamente? Como poderia ser melhorado? O sr(a) poderia me dar algum exemplo?

Exposição aos meios de comunicação

Gostaria de saber como as informações são trocadas em sua comunidade.

Geralmente, como o sr(a) sabe sobre notícias e acontecimentos? A partir de que meios?

O sr(a) assiste a televisão? Onde?

Com que frequência / Quanto tempo o sr(a) assiste a televisão?

Quais são os canais? Quais os programas?

O sr(a) tem um rádio? O sr(a) escuta a rádio (em geral)? Onde?

Com que frequência o sr(a) a escuta?

Quais são os programas de rádio que o sr(a) ouve?

O sr(a) escuta a Rádio Comunitária? Que programas?

O sr(a) lê os jornais? Quais? Onde?

Que tipo de artigos o sr(a) lê?

O sr(a) tem acesso a um computador e à Internet a partir de outros locais, para alem do telecentro? Onde?

Tem uma linha de telefone fixo?

O sr(a) tem um celular?

Com quem o sr(a) se comunica através do telefone / celular?

Para que o sr(a) usa principalmente o seu telefone celular?

Terminamos a entrevista: Existe alguma coisa que o sr(a) gostaria de acrescentar?

Interview

Apresentação e explicação dos objetivos da pesquisa; confidencialidade; 1 hr. entrevista; fita.

Identificação do entrevistado

Agora, gostaria de lhe fazer algumas perguntas sobre você ter uma ideia mais precisa sobre as pessoas que vivem nessa comunidade.

Qual é seu nome?

Quantos anos o sr(a) tem?

Qual é o seu nível de escolaridade?

Qual é o seu trabalho / ocupação principal?

Que idiomas/línguas o sr(a) fala?

Perceção sobre o CMC

Gostaria de saber algo sobre o CMC, como ele é usado pela comunidade.

O sr(a) sabe que o CMC existe? (FOTO)

O sr(a) sabe o que é?

Alguma vez o sr(a) já esteve lá? Por que (não)?

O sr(a) conhece alguém (na sua família / amigos) que vão para lá?

Alguém contou-lhe alguma coisa sobre esse lugar?

O sr(a) tem uma ideia do que as pessoas fazem lá?

Conhece a parte do telecentro?

O que o sr(a) acha que é? O que o sr(a) acha que as pessoas fazem lá?

Se sim, o sr(a) acha que é útil? Por quê?

O sr(a) conhece/escuta a Rádio Comunitária?

Com que frequência? Quanto tempo por dia?

Que programas?

Porque o sr(a) ouve a Rádio Comunitária?

O sr(a) conhece (outras) pessoas que escutam a rádio comunitária?

Que programas eles escutam?

O sr(a) sabe porque as pessoas da comunidade ouvem a radio?

Eles participem dos programas de rádio? Como?

O sr(a) é capaz de utilizar computadores e Internet?

Se sim, onde o sr(a) aprendeu isso?

Porque o sr(a) não vai ao CMC?

O sr(a) estaria interessado em ir ao CMC de X? Por quê?

Se um amigo seu lhe pedisse para explicar o que o CMC é, o que o/a sr(a) responderia?

Se um amigo seu lhe pedisse para explicar o que a rádio comunitária é, o que o/a sr(a) responderia?

Se um amigo seu lhe pedisse para explicar o que o telecentro, o que o/a sr(a) responderia?

Se um amigo seu perguntasse o que é um computador, o que o/a sr(a) responderia?

Se um amigo seu perguntasse o que é a Internet, o que o/a sr(a) responderia?

O distrito era diferente antes do CMC existir? Como? (Mesmo com TC e rádio em separado).

O que o/a sr(a) gostaria que sefizesse mais ali? O sr(a) poderia me dar algum exemplo?

Exposição aos meios de comunicação

Gostaria de saber como as informações são trocadas em sua comunidade.

Geralmente, como o sr(a) sabe sobre notícias e acontecimentos? A partir de que meios?

O sr(a) assiste televisão? Onde?

Com que frequência / Quantashoras o sr(a) assiste a televisão?

Quais são os canais? Quais os programas?

O sr(a) tem um rádio? O sr(a) escuta a rádio (em geral)? Onde?

Com que frequência o sr(a) a escuta?

Quais são os programas de rádio que o sr(a) ouve?

O sr(a) escuta a Rádio Comunitária? Para que programas?

O sr(a) lê os jornais? Quais? Onde?

Que tipo de artigos que o sr(a) lê?

O sr(a) tem acesso a um computador e à Internet a partir de outros locais, para além do telecentro? Onde?

Tem uma linha de telefone fixo?

O sr(a) tem um celular?

Com quem o sr(a) se comunica ao telefone / celular?

Para que principalmente o sr(a) usa seu telefone celular?

Terminamos a entrevista: Existe alguma coisa que o sr(a) gostaria de acrescentar?

Annex 2: Interviews and Photos corpora

[See attached DVD]

Annex 3: List of articles for Chapter 2 literature review

[See attached DVD]