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Crowd-Based Social Enterprise: A conceptual model for a research agenda in ICT4D

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Abstract

Information and Communication Technology for Development (ICT4D) can be a means to improve the situation of people in disadvantaged positions in at least three different structures of power: economic, social, and political. The main purpose of this conceptual paper is to provide the grounds to sustain that crowd-based information systems could be used to support SEs designed to reduce the vulnerability of people in disadvantaged positions in one or more of these structures of power. To accomplish the aim of the paper, and as a major theoretical contribution, a model is suggested. The model explores how three specific components (i.e. social enterprise, crowd of contributors, and regional development plan) of an ICT4D project, based on this approach, may provide short, medium, and long term impact at the individual, organizational, and social level. The main practical implication is the development of a structure to report the value generated by an ICT4D project. This structure allows the comparison among projects and reports results based on the Theory of Capital Systems, a theory applied in Knowledge-Based Development initiatives. For academics, this will provide the elements that, in a future, could make it easier to create strong theories from experiences in this field. For practitioners, this may provide evidence for the degree of success attained by a project.

Keywords

Information and Communication Technology for Development, ICT4D, Knowledge-Based Development, KBD, Social Entrepreneurship, Social Enterprise, Capital Systems, Crowdfunding, Crowdsourcing, and Group buying.

1. Introduction

The exchanges of Information, and the processes to create knowledge, are more dynamic than ever before and they will be even more than they are now. This unsteady phenomenon offers the possibility of changing structures of economic (e.g. E-Commerce), social (e.g. E-Learning) and political (e.g. E-Government) power. For Hall and Midgley (2004) *Development* is a process where these three structures change to provide benefits to society; however, the more digital these structures become, the more excluded those without access to Information and Communication Technology (ICT) will become (Ayanso, Cho and Lertwachara, 2014; Heeks, 2008). Consequently, the role of ICT for Development (ICT4D) projects must be to pursue the diminishment of this exclusion. The question is how to design sustainable ICT4D projects to empower individuals in economic, social and political contexts?

ICTs are tools flexible enough to transmit data or transform societies; nevertheless, its impact in the area of Development is tied to the context and the methods utilized to apply them. Harris (2016) asserts that the lack of promotion of ICT4D research beyond the research community restricts professional practice and policy reform. The aim of an ICT policy is to define how these technologies may increase a society's capacity to achieve better development levels (Ordoñez, 2015), unfortunately, the lack of promotion leads to short-term and narrow strategies that constrain the impact of ICT projects (Lin, Kuo and Myers, 2015). If greater results are to be expected, larger challenges must be established. For Qureshi (2013; 2015) the biggest challenge in the area of ICT4D is to improve the quality of life in people all over the world. Given that isolated budgets, schedules and leaderships are not enough to accomplish the challenge, the following question arise: is it possible to connect short-term, and independently designed, ICT4D projects to create long-term collective value?

An ICT4D project should enable an increase in the human capital of the community. Heeks (2008) emphasized that ICTs have not been understood as tools to transform people in disadvantaged situations into development engines, and ICTs have been reduced to means of information transfer. Therefore, social enterprises (SEs) based on ICTs emerge like an option to clarify, and guide, the life-changing role of ICT4D projects (Qureshi, 2015). This approach could be successful given that there are diverse examples of how people are using the cyberspace to share and obtain benefits that do not follow the traditional logic of the financial system (Gómez-Diago, 2015). If the expected impacts of the SEs are aligned with regional strategies, the ICT4D projects could be a core part of the community development. Consequently, to understand the relationship among the crowd of contributors (i.e. internal and external members of the community that support one or more SEs), the SEs, and the regional development plan is a promising path for both; theorist and practitioners. In particular, in urban areas where the ICT infrastructure is expected to be better than in rural context.

1.1 Purpose of inquiry

The purpose of this conceptual paper is three-fold: First and foremost, to explore how crowd-based information systems could be used to support SEs designed to reduce the vulnerability of people in disadvantaged positions in economic, social, or political structures. Second, to highlight new strands of thinking in the area of ICT4D that could guide future research projects. Finally, to suggest the use of the Theory of Capital Systems (TCS) in the design, and evaluation, of ICT4D projects, given that this theory has been tested in projects focused on development.

2. Literature review

Many different approaches may be applied to implement an ICT4D project. The approach that is suggested in this conceptual paper is the creation of SEs which expected impact could be traced, and compared, since the design. Each SE must be supported by a crowd of contributors and mediated by ICTs; the bigger the region and crowd to coordinate, the greater the necessity for ICT mediation. In practice, any one of these SEs can be an independent short-term project with specific economic and/or social goals for individuals and/or organizations. The advantage of this approach is that the impacts of each SE may be integrated with other isolated SEs creating a web of exchanges that could enable or assist the governmental strategy for long-term impact at a regional level. To identify and organize these exchanges, the TCS is suggested. The following

sections are organized as follow: First, the literature review presents the theoretical perspectives in section 2.1; then, the practical illustrations are discussed in section 2.2.

2.1 Theory of Capital Systems (TCS)

The Generic Capital System (GCS) framework is presented by Carrillo (2002) and it is formally defined as: "the taxonomy of a system's value categories". This framework has been proved to be successfully applied in organizational (CKS, 2016) as well as regional (WCI, 2016) contexts and its aim is to achieve and equilibrium of all the valuable elements of a particular entity (Carrillo, 2002). The GCS framework presents, at the organizational level, six categories of value. In contrast, at the regional level, the number varies to eight. In particular, it makes a distinction in both categories Human and Instrumental capital. The definitions for the capitals for both levels are specified in Table 1. Given that the SE are expected to be, at least in its foundation, small and medium enterprises, the definitions provided at the organizational level are based on González (2012). On the other hand, the definitions at the regional level are based on WCI (2012).

The distinctions between both types of frameworks are relevant given that the impact of ICT4D projects must be assessed based on the GCS at the regional level whereas the framework for the organizational level must be used to strengthen the SEs. González and Carrillo (2012) did a benchmark of city rankings and found that the Instrumental-knowledge capital can be evaluated through indicators like a) number of new business incubation and creation, b) survival rate of new business after five years, c) e-government, d) e-business, d) e-learning, f) e-work, and g) e-citizen participation, among others. Therefore, ICT4D projects intended to foster SEs may have an impact on the development of the community in the short-term, at least the Instrumental-knowledge capital of the region at the medium-term, and the whole Capital System of the region at the long-term.

2.2 Dimensions and components of an ICT4D project

This paper claims that by promoting the use of crowd-based information systems to support SEs it is possible to reduce the vulnerability of people in disadvantaged positons in one or more structures of power. Especially in urban areas where ICT infrastructure and people with the basic competences to use it are present. Therefore, the crowd of contributors that support the SE, and the SE itself, are the two main components that must be considered in an ICT4D project (see Figure 1). Likewise, whereas the TCS at the organizational level allows to equilibrate the categories of value of each SE to ensure its sustainability, at the regional level allows to organize the contributions that different SEs provide to the Regional development plan. Therefore, this plan is considered a third component to be considered in an ICT4D project.

Capital	Organizational level (González, 2012)	Sub-category	Regional level (WCI, 2012).
Identity	Entity's elements that convey an appealing image of uniqueness to all the stakeholders.		Elements that contribute to determine the region differentiation.
Intelligence	Entity's elements that allow to analyse and understand the		Elements that contribute to improve the process of analysis

	external factors that have an impact on the performance by improving the capacity of decision-making associated with prevention and response.		and response to external agents and events that affects the region.
Relational	Elements that contribute to stablish win-win relationships with customers, provider, allies and competitors.		Elements that provide cohesion and makes social integration possible.
Finance	Elements that stablish an equilibrium among incomes, expenses, savings and future investments.		Elements that reflect in monetary denomination the economic sustainability.
Human	Elements that the members of the organization provide to add unique value to the productive process.	Individual	Individual citizens' value-generating capacities to improve the capital system of the region.
		Collective	Collective citizen's value-generating capacities to improve the capital system of the region.
Instrumental	Organization's means and processes that are used to connect the rest of the valuable elements of other capitals to the productive process.	Material	Material-base elements through which other capitals improve their value-generating capacity.
		Knowledge	Knowledge-based elements through which other capitals improve their value-generating capacity.

Table 1: Definition of capitals

Each ICT4D project has specific programs which objectives are constrained by three dimensions: Level of analysis (i.e. individual, organizational, and regional), Structures of power (i.e. economic, social, and political), and Time to results (i.e. short-term, medium-term, and long-term). To stablish a program, the position of each component, in each dimension, must be declared. This position is determined by the coordinates X, Y, and Z, where X= Level of analysis, Y= Structures of power, and Z= Time to results. Therefore, each program is represented by a triangle inside of the spatial range of the dimensions (see Figure 1). There will be as much triangles in the model as programs in the ICT4D project. Each component is detailed during the following sections.

2.2.1 Social enterprise

As stated during the Introduction, this concept may be a feasible perspective to implement successful ICT4D projects, especially when the SE is sustained by a crowd of contributors. As explained by Young and Lecy (2014) the concept of SE is not specific and even more, there are different schools of though. This paper consider the perspective suggested by Choi and Majumdar (2014) where a SE is led by a social entrepreneur that foster the creation of social value by offering social innovations that are guided by the market. The main aim pursued by the

organization is not monetary profit but to cause improvements at the regional and individual level (Pierre, von Friedrichs and Wincent. 2014). This motivation is particular appealing for crowdsourcing and crowdfunding platforms users, who may provide, respectively, know-how and risk capital to the SE (Willfort and Weber, 2016). The role of the SE in the model depicted in Figure 1 is central. On one hand, this entity is a point of reference to attract resources from a crowd of contributors interested to participate in projects expected to improve the quality of life of the population. On the other, a SE may provide such impact that a) could help to accomplish the governmental plan of development, or b) could provide grounds to modify the current one.

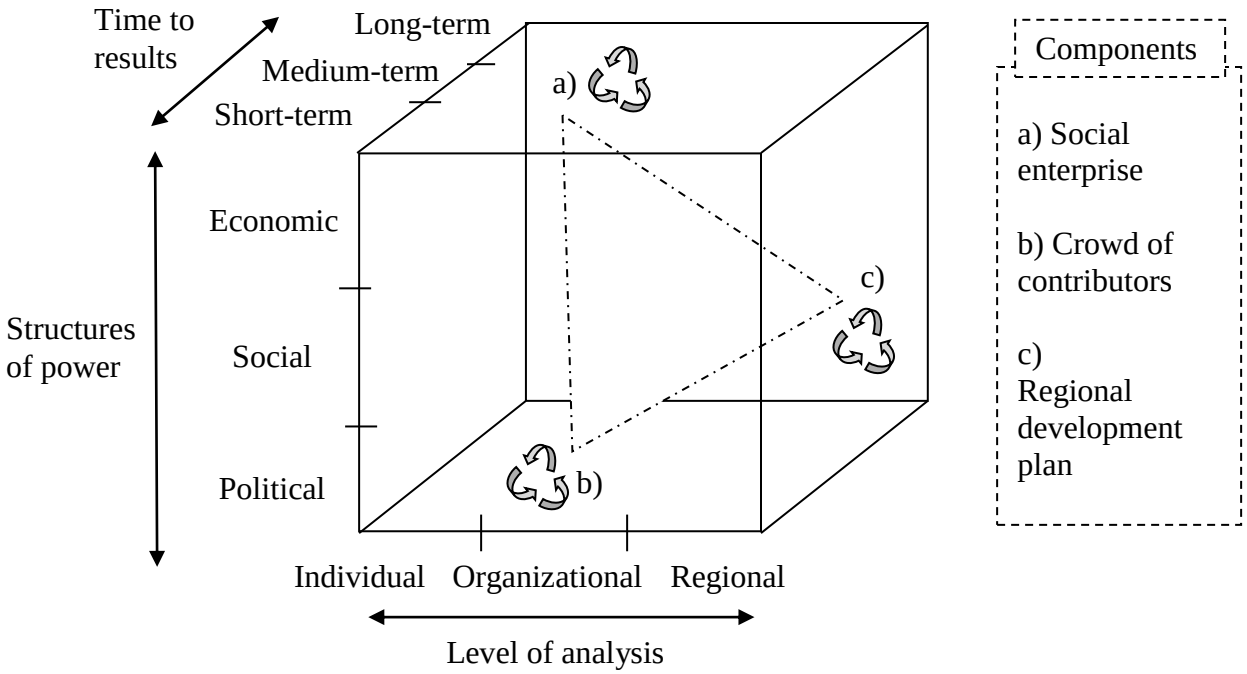

Figure 1: Dimensions and Components of an ICT4D Project

2.2.2 Crowd of contributors

The crowd of contributors plays a fundamental role in the model depicted in Figure 1 given that the business model of the SE must be designed according to the intrinsic motives pursued by the expected crowd. If the crowd could be open to anybody in the world, the business model should be different than a project where the crowd was restricted. Crowdfunding, Crowdsourcing and Group buying are three concepts grounded on the idea that collaboration may lead to achieving a common goal. In the case of Crowdfunding, the common goal is to fund a project to make it work whereas for Crowdsourcing it is to resolve tasks by providing talent (Gómez-Diago, 2015). Finally, in Group buying, the aim is to improve negotiation power and obtain benefits from the seller. In the following sections, these concepts are explained in the context of ICT4D projects.

2.2.2.1 Crowdfunding

Crowdfunding is a mechanism to collect money from a large number of micro-investors via the Internet instead of using traditional means (Van Looy, 2016). To attract the micro-investors, it is possible to offer in exchange rewards, financial interest, some equity of the company, or just the satisfaction of having cooperated in a meaningful project (Gómez-Diago, 2015). Although crowdfunding may be applied to any type of project, this paper claims that the concept of crowdfunding may be useful for ICT4D projects, at least, when it is used to fund star-ups and/or public projects. The main reasons of this claim are presented in the following paragraphs.

2.2.2.1.1 Crowdfunding for start-ups

Financial capital is required to implement start-ups; nevertheless, the project may not be suitable for a loan, an investment, or public funds. Consequently, crowdfunding schemes to raise financial resources directly from a large, instead of small, group of capital providers who believe in the project are restructuring the capital markets (Beaulieu, Sarker and Sarker, 2015; Moritz and Block, 2016; Willfort and Weber, 2016). Four distinctive schemas are donation, reward, lending and equity (Beaulieu, Sarker and Sarker. 2015; Gómez-Diago, 2015; Moritz and Block, 2016; Van Looy, 2016); although different in nature, all those schemes allow society to self-select what it is that they consider relevant and which type of SE may provide it. In fact, the members of the community of contributors of the crowdfunding platform (inside or outside of the recipient region) may create social bonds with the project and be its engine.

2.2.2.1.2 Civic Crowdfunding

Civic crowdfunding allows to generate public goods, i. e. goods that can be consumed, or used, equally, by all the member of the region (Davies, 2015). As well as crowdfunding for start-ups, for civic crowdfunding the online and offline community are central to the projects (Stiver et al. 2015). As an example, ICT4D researchers/practitioners can apply this concept to empower citizens to take control over the design of the infrastructure of their neighbourhoods. Therefore, social influence may impact the dwellers' decision to collaborate and fund community projects. It is true that the availability of monetary resources may lead to inequality (Davies, 2015); nevertheless, innovations in this area of research may provide options others than money to collaborate. For example, a community local blood-bank where some can provide blood, others hours of work, and others money. Civic crowdfunding models to avoid inequalities is a promising ICT4D research area.

2.2.2.2 Crowdsourcing

The term Crowdsourcing refers to a crowd of people willing to accomplish, by applying knowledge, skills, competences, and/or expertise, the tasks posted by the solicitor in exchange of a compensation (Steelman, Hammer and Limayem. 2014; Thuan, Antunes and Johnstone. 2015; Zhao & Zhu 2014). The main idea behind this is that people in online communities, working in collaboration with each other, can resolve tasks with the benefits of reducing costs, increasing quality, and reducing the time to accomplish the assignments (Keating, Rhodes and Richards. 2014). Even more important, the collective richness of opinions can creates innovative strands of thinking for solicitors (Blohm, Leimeister and Krcmar. 2013; Majchzak & Malhotra. 2013). ICT4D projects based on crowdsourcing can, for example, develop an electronic platform to receive feedback from locals about local routes appealing to foreign travellers; and then, make it public on the Internet on via an e-word of mouth approach. This could attract foreign tourist (and

their economic contributions) to local business that otherwise will hardly be known by them. The design of this type of projects, which may be highly replicable, could be a good strand of research for the ICT4D area.

2.2.2.3 Group buying

In Group buying, people interested in the same goods interact by their own initiative, or by initiative of an independent third party, to obtain benefits from the provider of the goods (Cheng & Huang, 2013). The main benefit for customers are discounts whereas for providers are reduction in the cost of searching and dealing with individual buyers, and increasing sales by acquiring customers than otherwise will not buy from them (Mladenow, Bauer and Strauss, 2015). This type of models create a sense of belonging among the participants (Lim, 2014) which may be a valuable impact of ICT4D projects. For example, if the group acquire medicines for chronic degenerative diseases, beside the discounts, social bonds could improve the quality of life in patients; specially, children (set aside by other kids) or elder people (set aside by other members of the family). If the group acquire prepared homemade dishes, elder people who cannot go out, or people who want to save money, could prepay for the same kind of dishes. In this scenario, the provider reduces the operation costs and assures a stable demand. This research line is also auspicious for ICT4D projects, and the results could be replicable.

2.2.3 Regional development plan

The regional development plan is a component that provides common goals and can be defined by the government or development agencies. If SEs consider this component, regional interests can be part of the *raison d'être* of the SEs in the short-term, and it will be easier to connect independent short-term ICT4D projects in the long term. Government and development agencies support ICT4D projects based on the idea that ICT skills are essential in the current global context (Sey et al, 2015). But the skills are not the only central issue in a regional development plan. Planning requires a commitment to listen the members of the community (Clarke, Wylie and Zomer, 2013). Therefore, SEs can act like nodes to acquire the community knowledge about what is needed in the region and then, to provide elements to accomplish or modify the regional development plan based on those real facts.

3. Discussion and analysis

The model depicted in Figure 1 is used to establish the impact expected from a specific program of an ICT4D project into the boundaries of three dimensions. Consequently, it allows to compare ICT4D projects even if the name of the programs are different among them, given that the coordinates allow to compare Expected benefits, Produced benefits, and their Cause of difference (see Table 2). For example, a specific program of the project (e.g. program A) may be represented by the coordinates Crowd of contributors (individual, political, long-term), Social enterprise (regional, economic, short-term), and Regional development plan (individual, economic, short-term) whereas another specific program of the project (e.g. program D) may be represented by the coordinates Crowd of contributors (regional, economic, long-term), Social enterprise (regional, social, long-term), and Regional development plan (organizational, economic, short-term). The information provided in Table 2, is an illustrative example of how a project with four programs (e.g. A, B, C, D) could be reported.

Every program is classified as successful or not based on the accomplishment of its specific objectives. Moreover, each program is defined by three objectives, one for each component. As illustration, the program defined in Table 2 as A should be read as follows:

> *Program A will be considered successful when the following objectives are achieved:*
>
> *a) The **Crowd of contributors** improved the position of target **individuals** in the **political** structure of power in the **long term**.*
>
> *b) The **Social enterprise** improved the position of the **region** in the **economic** structure of power in the **short term**.*
>
> *c) The sections H, I and J of the **Regional development plan** were accomplished by improving the position of target **individuals** in the **economic** structure of power in the **short term**.*

Program	Crowd of contributors	Social enterprise	Regional development plan	Expected benefits	Produced benefits	Cause of difference
A	individual, political, long-term	regional, economic, short-term	individual, economic, short-term	Benefit 1, 2, 3, 4, 5	Benefit 1, 2, 4, 5	Motive 1, 2, 3
…	…	…	…	…	…	
D	regional, economic, long-term	regional, social, long-term	organizational, economic, short-term	Benefit 1, 2, 3, 4	Benefit 4	Motive 1, 2

Table 2: ICT4D Project Report of Impact (Example)

The TCS is useful to organize, on categories of value, the expected and produced benefits of an ICT4D project. Although the GCS at the organizational level should be used to increase the sustainability of the SE, the ICT4D Project Report of Impact must be generated considering the GCS at the regional level. The main reason for this is that the impacts reported by this tool are associated to the community in the short-term, the Instrumental-knowledge capital of the region at the medium-term, and the whole Capital Systems of the region at the long-term (see Figure 2). The main contribution of Table 2 is the possibility to clarify, evaluate, and compare programs and implications of ICT4D projects with different context, as well as the implementation of benchmarks, and the construction of theory in this area, by a simpler method.

Although the TCS is a systemic theory, i.e. a change in one element affects the others, to exemplify how this theory guides practice, Figure 2 depicts a linear sequence of events that describe the strategic plan suggested in this conceptual paper. Firstly, the Dimensions and Components of an ICT4D Project (Figure 1) guides the definition of programs in the ICT4D Project Report of Impact (Table 2). Secondly, the ICT4D Project Report of Impact informs and evaluate, based on the coordinates, the expected benefits of the project for the community in the short-term, the Instrumental-knowledge capital in the medium-term and the whole GCS of the region in the long-term. This benefits are the positive expected changes in the Structures of power at the different Levels of analysis in a particular period of time. Finally, the ICT4D project impact the indicators of, at least, the Instrumental knowledge capital, and this impact affect the whole GCS of the region.

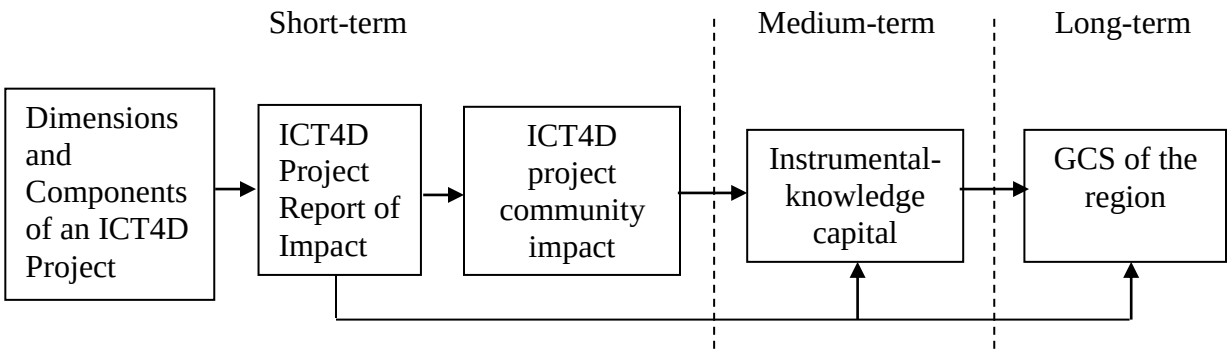

Figure 2: Strategic plan of an ICT4D project

4. Theoretical and practical implications

Rowe (2012) specifies that one way to make a theoretical contribution is to lead to a different and promising way of thinking. In that sense, the claim of this research is as follows: SEs can be a means to reduce the vulnerability of people in disadvantaged positions in one or more structures of power; especially in urban areas, given the availability of ICT infrastructure and people with the basic competences to use it. To sustain that claim, some strands of research are proposed during section 2.2; but most importantly, the model depicted in Figure 1 notes the units of analysis (i.e. social enterprise, crowd of contributors, and regional development plan) and the boundaries within those units interact (i.e. level of analysis, structures of power, and time to results). In addition, section 3 clarifies the laws of interaction among the units of analysis inside the boundaries and the different states that the model can present (i.e. the triangles) are justified. Besides that, the model can be tested through the application of the Table 2.

Figure 1 presents only the minimum elements required to be understood and applied. The intention is to be as parsimonious as possible for the benefit of both researchers and practitioners. Nevertheless, the richness of the model could not be appreciated without the TCS. The insights of the identity capital are embedded in the motives of the projects and the image of the SE. The intelligence capital is embedded in the process to analyse both the crowd of contributors and the regional development plan to position the coordinates of triangles. These two capitals interact until the offer of value is enough to attract a crowd of contributors (relational capital) and economic resources that make the project sustainable (financial capital). The human capital is embedded in the employees of the company and finally, the concept of instrumental capital is embedded in the Information System that mediate the interaction among the crowd and the SE.

From the practical perspective, both academics and practitioners are provided with a tool to evaluate the impacts of ICT4D projects (see Table 2). The main contribution of this tool is that allows the benchmarking among ICT4D projects from different contexts. In particular, the unexpected benefits and the possible causes of them. Even more, this paper in the section 2.2., presents specific examples of how the SE may improve the quality of life in urban areas. Lastly, in section 3 the precise instructions regarding how to understand, and follow, the logic flow depicted in Figure 2 are provided. In particular, this last diagram offers the elements to perceive

the whole panorama that a successful ICT4D project should pursue; firstly, the independent ICT4D projects are designed and implemented in the short-term. Secondly, the interaction of all the independent projects will be represented and organized by, at least, the Instrumental-knowledge capital, and finally, the isolated short-term projects, organized in the medium-term, could create a collective value reflected by all the categories of the GCS at the regional level in the long-term.

5. Conclusions, limitations and future research

ICT4D projects can improve the position of dwellers relative to different structures of power by promoting SEs supported by crowd-based information systems. To accomplish this goal, the involvement of crowds from inside and outside the community is required. The challenge is to clearly define the programs that could, in practice, improve the situation of people in disadvantaged positions. ICT4D researchers and practitioners must keep in mind that the ultimate goal of the project is to generate practices that could keep on working in the long-term. The SE should be designed to create/attract its own resources independently of specific actors (e.g. Government, NGOs, and Research Centres). Consequently, the model proposed in Figure 1 is intended to help in this endeavour by orienting the vision of the project since the beginning.

The first and second purposes of inquiry are addressed in section 2.2 by analysing current, and suggesting new, strands of research. During this section, recommendations to address the first question stated during the Introduction about how to design sustainable ICT4D projects to empower individuals in economic, social and political context are provided. Future researchers should consider how to improve the perspectives suggested here, and how feasible it is to start an ICT4D project that is intended, from the beginning, to change structures of power at different levels? The third purpose of inquiry is addressed by introducing the TCS in section 2.1. And by explaining, in section 3, how it guides the Strategic plan of an ICT4D project. In particular, this last point answers the second question stated during the introduction associated with the possibilities to connect short-term, and independently designed, ICT4D projects to create long-term collective value. This paper not only claims that it is possible, but also proposes how to address the issue.

Some limitations of this conceptual paper are the lack of a specific case of study where the two models and the report could be applied, but this does point to future research, which is theme of a whole new paper. In the same sense, another limitation is the lack of real-life cases presented in rural areas, the reason is that this paper invites to consider how to use ICT4D in the context of urban areas with low income dwellers. This approach could prevent poverty not by reducing the number of current poor people but by strengthen the low income sector, and then, avoiding them to fall in poverty. The focus of this paper is not to favour a current methodology, technology, or context of a particular case of study. The intention is to propose a model that could provide the grounds for future research; but most importantly, future ICT4D projects that contribute to improve the situation of people in disadvantaged positions in at least three different structures of power: economic, social, and political.

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