

Tics as a Mechanism to Energize the Microeconomy for Poverty Reduction

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Abstract

Objective: Analyze the different ways in which Information and Communications Technology (ICTs) linked in a micro economy succeed in expanding strategies for the creation of commercial projects and their national and international dissemination. **Methodology:** In order to achieve the proposed objective, a qualitative methodology was proposed which, based on a documentary review in both the English and Spanish languages, extracted the most relevant aspects in order to respond to the subject matter under study. **Findings:** The poorest communities in Colombia experience a series of ignorance's in the use of ICTs, represented by misuse, affordability and/or inexperience for the incorporation of these new mechanisms in lifestyles, therefore, ICT-focused education should be promoted. **Application:** The ICT training will be crucial to drive new business and commercial dynamics; therefore, its relevance takes on great significance in the processes of impulse to overcome poverty, an aspect that should be promoted in all educational instances.

Keywords: Education, Entrepreneurship, Information and Communications Technology (ICT), Microeconomics, Poverty

1. Introduction

The International Poverty Centre (IPC) has defined this condition according to two aspects: first, it argues that poverty may reflect a lack of specific goods or assets, such as clothing and housing; it may also reflect a lack of quality services such as health and education. Second, it argues that poverty can be expressed as a deprivation of capabilities, this includes human, for example, physical abilities and capabilities and also gaining respect and recognition in society. Although poverty must not only be related to income, it cannot be denied that, if a person has more money, he or she could have access to better education, better health services and acquire those skills to earn the respect of society¹.

Colombia has been a country of economic declines, but has also been immersed in various socio-economic projects for poverty reduction, represented in employment, education, health and welfare; between 2002 and

2013 the country lowered the unemployment rate from 15.6% to 9.6%, similarly, in the field of education school quotas have increased approximately 2,100,000 between average and basic. Poverty, however, converges in different parts of the country in different ways, in some as the Chocó and Cordoba is a current reality, different environments are evident in Bogota with a poverty rate of 11% according to the same source.

In this way, poverty reduction is a work represented in different fields of the integral life of the human being; according to experts in this sense, in the margin of the Food and Agriculture Organization (FAO) of the United Nations: Poverty can be conceived as a situation of generalized degradation (nutrition, education, health) that affects individuals physically, as well as physiologically and psychologically, depriving them of their basic capacities and incapacitating them to exercise their rights and improve their quality of life². Recent studies have made

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it possible to delineate specific characteristics which, among other aspects, cite those shown in Figure 1.

As evidenced by the characterization of poverty is stated, once the different environments or areas of development of the individual are latent deficiencies in aspects such as: health, nutrition, employment, health, income, technology and housing, among others³. Based on the above, the population with low resources must need strategies that favor not only their economic status, but also the enrichment of the educational environment, health

and well-being as such, that is, a balance for marginalized communities, in favor of poverty reduction and integrity of life⁴.

According to these approaches, Information and Communications Technologies (ICTs) are implemented as a strategy in a dialectic between creativity, the cognitive emancipation of the individual and job, advertising and/or trade opportunities that globalize the economic idiosyncrasies of the regions or communities that are part of the area of interest². The International Development

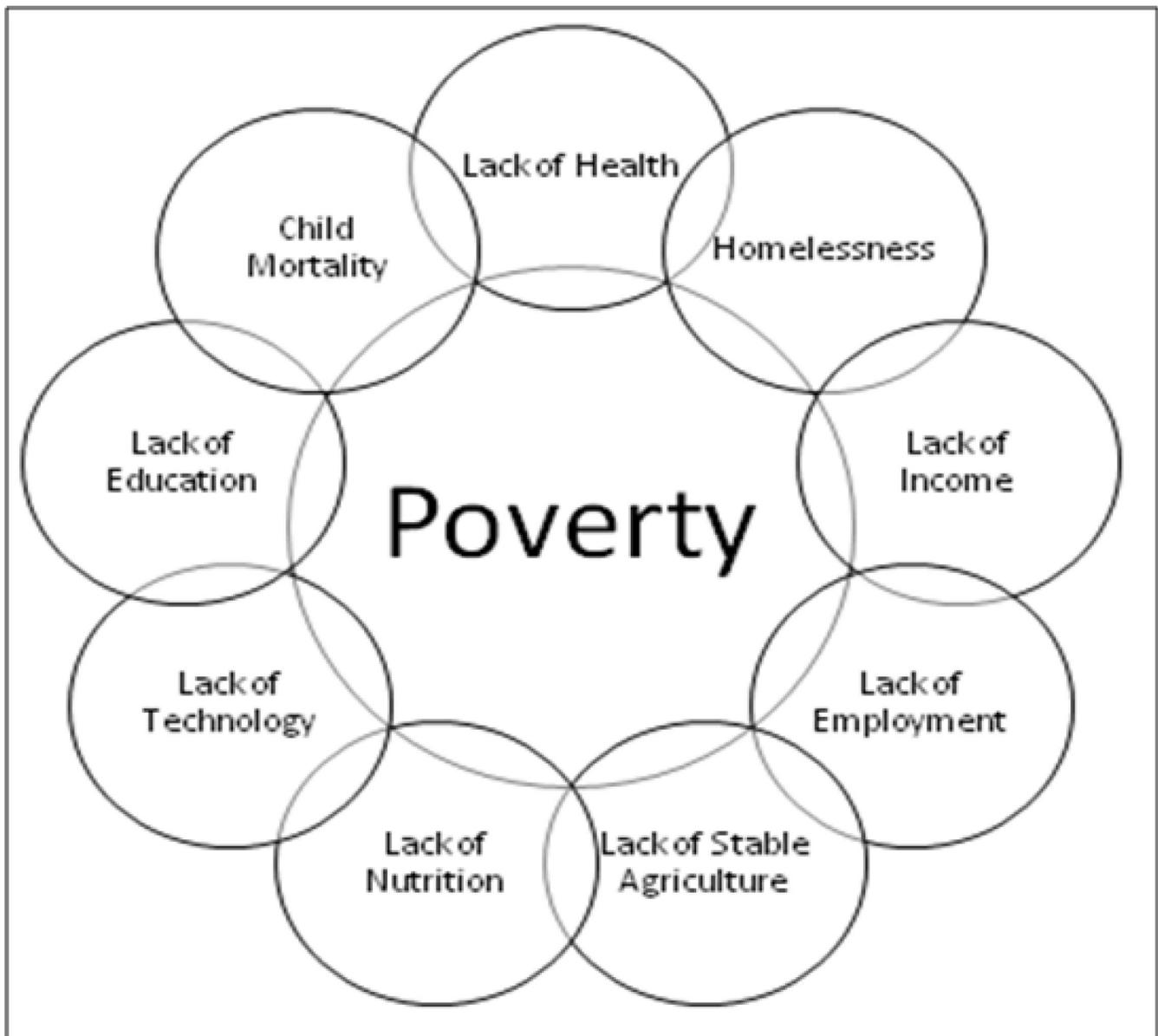


Figure 1. Characteristics of poverty.

Research Centre (IDRC) has funded a number of initiatives that explore poverty alleviation and access to ICTs and has brought together some of its results in which the positive impact of the measures taken can be observed⁵:

- With information from 28 developing countries, it was found that an increase in the number of phones, both fixed-line and mobile, has a positive impact on national economic output,
- In a typical developing country, an increase of 10 mobile phones per 100 people generates 0.6% per capita GDP growth. This is twice the expected impact in a developed country,
- Observing 113 countries for more than 20 years, the Food Policy Research Institute found that a 1% increase in telecommunications penetration led to a 0.03% increase in GDP, and
- A World Bank study in Kenya in 2010 estimated that ICTs were responsible for about a quarter of Kenya's GDP growth during the first decade of the 21st century.

In the so-called new economy, the role played by knowledge institutions is strategic, particularly those entities dedicated to providing education, as well as other organizations aimed at promoting research, innovation, creativity, entrepreneurship, development, generation and exchange of knowledge and new technologies⁶.

2. Methodology

Bibliographic information was searched in scientific databases in order to compile documents of importance for the development of the article. The descriptors were used: scientific documents, revisions, concept maps, synoptic tables, critical reading, the records obtained oscillated between 20 and 30 records after the combination of the different key words, taking the suggestions of authors and experts that indicate these steps for assimilated processes⁷. The internet search was also executed in the academic Google engine with the same concepts. Documents were chosen that were in a formal framework and had reliability and contributed to the issue of poverty reduction through microeconomics with the implementation of ICT, so there was an analytical and critical reflection through mental maps and a matrix of extraction of inputs, which facilitated the whole process.

3. Outcomes

The framework of the micro economy is immersed in the interests and life projects of populations marginalized by the new communication and information technologies, despite being in one of the stages in which ICTs abound, many communities still do not conceive these tools as forms of productivity and, therefore, the opportunities it offers are dissipated⁸, another author mention that the incursion of a modern socio-economic scenario, forged mainly in change and in impalpable resources such as technology, information and education are configuring a new way of managing business at the organizational level. In addition to national coverage⁹, the ICTs take on a fundamental objective in favor of poverty reduction, facilitating knowledge in support of communities that do not have the facilities for dissemination and linkage to the Colombian market¹⁰.

For their proper insertion, it is necessary to implement public policies that include a financial framework in the strengthening of particularities, exercising new visions of the world, turning spaces that not only generate employment, but can also be employers, a strategy in favor of commercial autonomy and productivity. Thus, there is a growing autonomy for the formalization of work and capital that strengthens not only the quality of life of individuals, but also the independent productivity of the country¹¹.

These financial purposes represent difficulties for the entrepreneur in the development of microenterprises, and even more, in the insertion of ICTs for their management, due to the great un-knowledge that is presented at the time of facing them. However, for the microenterprise each of them is presented as a risk to be overcome. Support plans or initiatives must balance these threats in order to act on them and exclude the preventions that inhibit organizational development¹².

It is for this reason that the linkage of governmental strategies that count on interventions of legal type, educational in the incorporation of the ICT, personnel of trainings in the education for the life, the well-being and with it the reduction of the poverty; they act of motivation and incentive for the marginalized communities, so that they can undertake organizational plans for the execution of new projects¹¹. In other words, strategic financial mediation in small informal production needs to be aligned

with informal processes, to unravel the risks and prospects of possible operations, to test mechanisms, new services, and different policies, among other highly relevant components⁸.

Poverty reduction strategies based on the incorporation of ICTs in the development of community productivity, using trade innovation in accordance with Colombia's regional specialties, is one of the alternatives that best converge in commercial dissemination, so that not only are the ICTs offered to the poorest communities as tools for insertion into their new projects, but it also encourages new productive, innovative and creative forms in favour of commercial globalization, based on the organizational development of the micro-economy. In¹³ cited strategies: the implementation of the strategy takes the form of a series of programmes and projects aimed at contributing to the achievement of the planned goals, both at the global level and in relation to each of its programme areas. These programmes can promote positive links that reduce poverty. Thus, as the strategies configure a predictive environment for societies of extreme poverty, this implies that their designs must be inherent to the context of the communities; with this, it is intended that the different projects that in the future may be implemented in the linkage of ICTs for the development of micro-economies.

Therefore, ICTs do not by themselves represent a guarantee of positive change in society, challenges appear that need to be faced, new educational programmes, quality control of virtual materials and services, good teaching practices in the use of ICTs, training teachers to intervene dynamically in their communities using these tools¹⁴. On the other hand, another¹⁵ states that the relevant increase in the use and insertion of ICTs has been accompanied by an increasingly extensive literature on the contribution of these technologies to economic growth, development and poverty reduction, as well as propositive information to promote a collective and forceful movement.

From the above, it can be deduced that ICTs are a basic tool for improving access to education, social services, empowerment and employment, with the objective of increasing economic productivity as a development product that serves to eliminate poverty. In contrast, another^{15,16} state that there are no guarantees that ICTs will have a positive impact on poverty reduction. They argue that access to ICTs depends on income, education and resources, and that the so-called digital divide is part of a much wider development divide. They argue that

socio-economic development contributes to greater use of ICTs and not the other way around.

However^{15,17} states the following: "It is not confined to academic teaching, but encompasses the cognitive tasks implicit in question formulation, problem solving and knowledge application" (p. 2). Despite the fact that ICTs have been part of a social impact throughout history, they are still a useful tool for reducing poverty and schooling levels among the world's population, playing an important role in educational processes.

3.1 Implementation of ICT in the Educational Field, Management for the Development of Innovation

The teaching of ICT in education is an issue that addresses different problematic aspects for its effectiveness; on the one hand, the curriculum, far from the technological government weakens its development in the educational axis. On the other hand, the teacher who has manifested a curriculum in all his educational experience and who considers it effective refuses to restructure his practices, taking a closed and dogmatic position in the face of the possibilities of ICTs. For this reason, teachers must be aware of the possibility of innovating the way they conceive and carry out the educational processes under their responsibility; at the same time, they must have the opportunity to put into practice the changes they consider desirable. This requires that there be educational institutions and directors who are sensitive to innovation and who favor rethinking teaching practices in favor of an influential society in the technological area.

On the other hand, state organizations, in their programs on the provision of technological equipment in order to strengthen the teaching and learning of ICT in marginalized populations, forget in many cases the training of teachers in order to emancipate technical knowledge to knowledge more proper to reflection and linkage for a conscious and effective perception of ICT in society. To a large extent, the training offered to teachers focuses on technical aspects, knowledge for the procedural use of the endowments, however, it is important that the teacher takes a position in front of such knowledge, and succeeds in undertaking a teaching that gives meaning to ICT in its *raison d'être* in society, since it is an endowment that will revolutionize or not according to its human talent in extreme poverty¹⁸.

In other words, it is not enough to guarantee in Educational Institutions the provision and updated technological infrastructure within the reach of the entire community, if actions are left aside to guide professional development, mobilizing daily educational practices, school management models, making them more efficient and participatory for the benefit of student learning¹⁹. Regarding the foregoing, Castillo infers that having the media means, at present, possessing a social power, not so much for the content they transmit but for the environment it creates, the attention and mimicry it awakens. The medium act as a mirror that reflects social reality and, at the same time, is the place where it is created²⁰.

It is essential to know the different means of communication and production offered by ICT, it is therefore an education that dominates technical aspects related to technologies and their management, but also to train thoughtful and innovative individuals to take advantage, that is, an educational incorporation for productivity of ICTs that reduce poverty, as an incentive through globalization in particular commercial projects. According to other author²⁰, the media collect, elucidate, value and report information from social associations as an expression of the needs of the social ecosystem, in such a way that trainers must be prepared to carry out an analysis of the discourse that manifests the need for the use of ICTs in an information society that is aware and critical of a low-resource social reality.

However, it is convenient to address the issue of the virtual educational community in terms of the benefits offered by ICT in favor of different alternatives that this allows for access to a more immediate education. Virtual learning communities are a space that have very precise objectives in the training of individuals, since they allow students to develop an interactive and significant learning process, since in one of these environments it means, according to González: a learning environment where the participant acts, uses his or her abilities and devices to obtain and interpret information in order to build his or her learning²¹. On the other hand, digital environments offer the possibility of generating support strategies for the learning of those who interact, where ICTs are the means, but are not an end in themselves, hence the importance of making pedagogical use of these through building knowledge, creations, innovation, creativity, among others²¹.

If the effectiveness and efficiency of business management is to be sought through ICTs, it is necessary to qual-

itatively reconsider the forms of work organisation the human relations within it and, consequently, the power structures within the organisation itself¹⁹. The analysis of the educational impact of new technologies not only requires us to analyze their effects in relation to how to improve teaching processes (...) it is a question of making explicit and reflecting pedagogically on one of these perverse social effects: the new technologies are a new factor of social inequality, due to the fact that they are beginning to provoke a greater separation and cultural distance between those sectors of the population that have access to them and those that do not²².

It is therefore a question of generating policies that do not divide a technological society into literate and non-literate, but rather promote strategies and cultures that contribute to technological knowledge and, in turn, develop values and attitudes in a social and influential way in relation to technologies. Similarly, other author²² provides an integral educational model in relation to qualifying and alphabetizing in the use of new technologies, which he attributes to four areas of training in Figure 2.

The dimensions of interest can be described as follows²²:

- Instrumental dimension: relative to the technical mastery of each technology (practical knowledge of the hardware and software used by each medium),
- Cognitive dimension: relating to the acquisition of the specific knowledge and skills that make it possible to search for, select, analyse, understand and recreate the enormous amount of information that is accessed through new technologies,
- Attitudinal dimension: relative to the development of a set of values and attitudes towards technology in such a way that it does not fall either into a techno-phobic positioning (that is, that they are systematically rejected as evil) or into an attitude of uncritical and submissive acceptance of them, and
- Political dimension: related to the awareness that information and communication technologies are neither aseptic nor neutral from a social point of view, but that they have a significant impact on the cultural and political environment of our society.

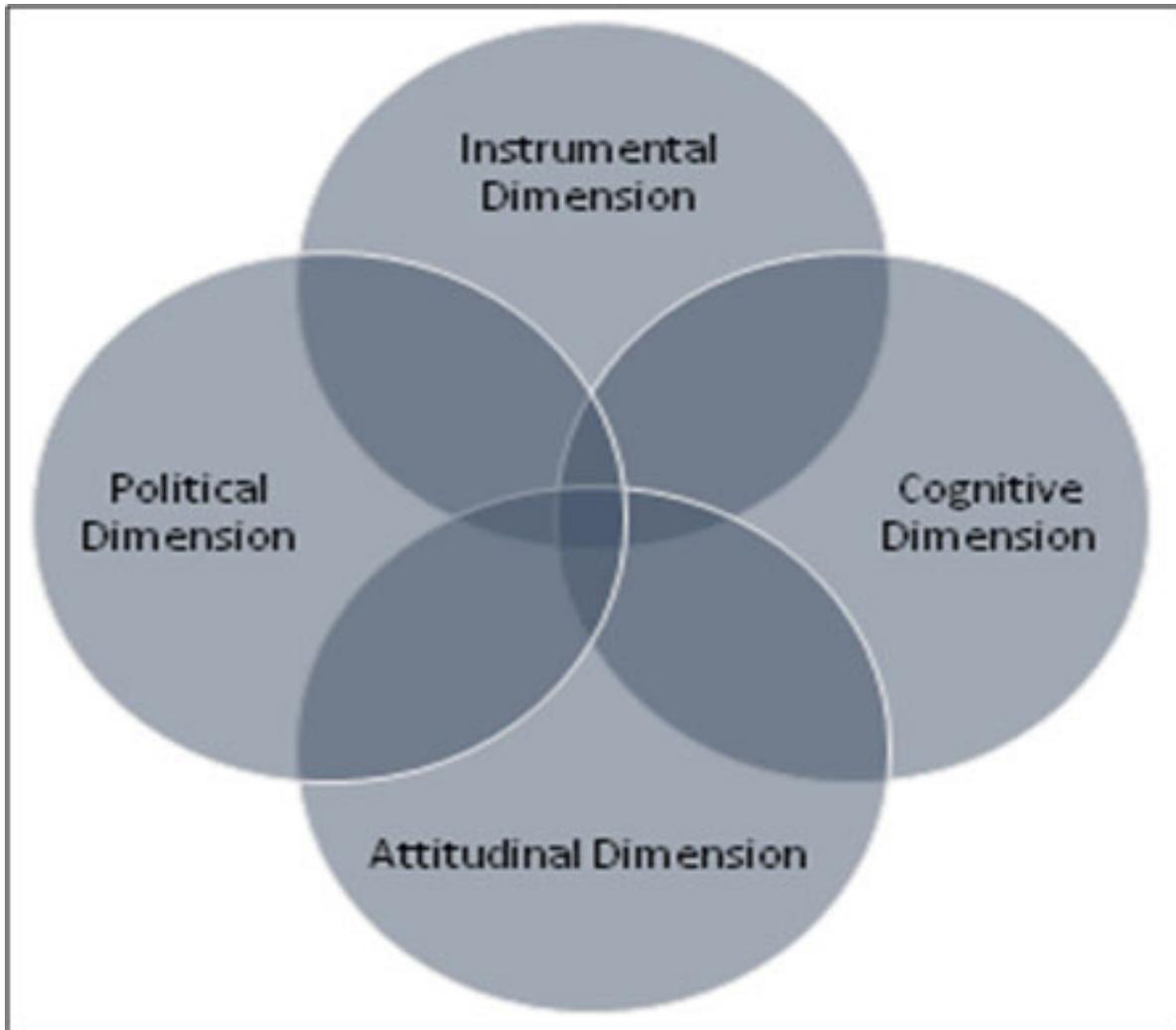


Figure 2. Composition of the integral educational model.

In addition, it is a broad regime of teaching about ICTs that involve everything from technicality to the personal and social influences that they may have. It is for this reason that pedagogical practices must maintain a high degree of attention in every aspect of the use of ICT in the classroom, encourage a knowledge of ICT that forms human beings capable of using the tools to understand their environment, and act on it, tools that are not orthodox and that on the contrary are in a constant dynamic of alteration.

It should be noted that different entities such as Colciencias, the Ministry of National Education and the Ministry of ICTs have made it possible to generate some projects to promote the incorporation of ICTs in educational contexts, and this has evolved in recent years;

this has been a strength and support for the educational system, affecting the actors in the learning process and ensuring in some way an improvement in the quality of education in the different modalities (Najar, 2016).

Thus, ICT reinforces the constructivist model according to the principles and strategies that are used in the learning teaching process, where the student is responsible for his or her own learning process and incorporates a series of activities related to ICT, as they are: Virtual forums, concept maps, cognitive maps, symposia among others. In this way, it is evident how ICTs are able to radiate in each one of the levels of schooling, by getting involved in the daily work of teachers and students²³ incorporating through digital devices tools that improve the quality and educational opportunity for the continuous



Figure 3. Contribution of ICTs to educational improvement.

improvement of the educational community. As a result, the contributions illustrated in Figure 3 were presented to the improvement of education through ICTs.

The above benefits can be described as follows:

- Incorporation of ICTs in higher education: the contribution to improving the quality of education, the dynamization of the educational process, and the acceleration of processes that seek to develop pedagogical and methodological alternatives that replace or at least enrich traditional educational practices²⁴,
- Impact of ICT on student learning: although there is some positive evidence of this impact, it still does not allow clear conclusions to be drawn. The results are often contradictory to each other and obtained in very particular circumstances that do not allow generalizations to be made. However, it is important to highlight two exceptions. Firstly, one of the most consistent findings of the research is the impact of ICT on intermediate variables such as student motivation and concentration²⁵, and
- Quality of Education: it contributes to the improvement of the quality of education, constituting means or tools that support the pedagogical process; nevertheless, there is a risk of approaching this activity from a merely technological perspective, forgetting that the problem of education, with all its complexity and multivariable reality, more than technological is pedagogical²⁶⁻²⁸. Consequently, the improvement of the quality of education is a discussion that is in debate, since technology would only be a variable of analysis.

4. Conclusion

The ICTs play an important role in economic and social development, since their potential has been demonstrated for the well-being of the population, mainly the vulnerable groups, who find through the ICTs a space of opportunity that, through integration, eliminates the barriers of marginalization, exclusion and social backwardness to give way to a cohesive society.

From a human rights perspective, information technologies are a means for people to develop all their capacities and potentialities and to achieve their development; they also open the way to be able to demand and exercise other human rights, since through information technologies, people can demand transparency in the conduct of governments, participate in the construction of democratic societies through their freedom of association, demonstration and expression.

To conceive of the new era of ICTs is to face new thoughts, new lifestyles an appropriation of a context that is different from the past, that has dissimilar perceptions of the world and that, therefore, is learned in a different way. For this reason, to think of an equal organizational structure without reflecting on history and social and commercial needs is perhaps an unfavorable praxis for microeconomics, poor to improve living conditions and thereby reduce poverty in all areas of the inhabitants. It is thus, as from the approach of an integral approach, where technology plays the role of relational tool, it is vital that its definition and orientation has been motive of work of all the personnel, to create the strategies and to generate the suitable environment to foment and to orient its good use.

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