

Determining Factors and Nature of Innovation in the Process of a Paradigmatic Mexican Innovative Social Entrepreneurship

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Abstract

The process of a social entrepreneurship based on innovation, from identifying a social need to implementing a novel solution, is an unattended subject by the literature on social-purpose entrepreneurship and innovation. This paper analyzes the factors that brought about the evolution of this process and discusses the nature of its innovations. Based on a detailed case study of Isla Urbana AC—one of the most successful and renowned Mexican social entrepreneurship cases—this paper deduces that these factors are divided into two levels, which can not be analyzed in isolation: internal (associated to characteristics of the entrepreneur as an individual and strategy of the organization) and external (conditions imposed by the context). It is shown that these set of factors bring about certain types and distinctive attributes of innovation, which is an essential tool for the creation of social value and sustainability of the entrepreneurship. It points out that innovations, radical and/or incremental, are not only technological and tangible (of products, services, etc.), but has a strong non-technological and intangible component (eg. business model and social inclusion strategy).

Keywords: social entrepreneurship; innovation; determining factors; nature of innovation, México

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1 Introduction

Social Entrepreneurship (SE) is an emerging phenomenon, increasingly widespread both in literature and in the political discourse, and mainly in new entrepreneurial practices worldwide (Dees, 2012). These practices are led by a mission aiming to address the social problems by overcoming unmet needs of vulnerable and poor population.

It was identified that innovation is one of the main tools to achieve solutions in unprofitable contexts. Therefore, an innovation-based, social-purpose entrepreneurship is called *Innovative Social Entrepreneurship* (ISE). Where this (innovation) is not only technological and tangible, connected only to production processes in the company—as underlined in the prevailing theory (Schumpeter, 1911; Nelson & Winter, 1982; Dosi, 1988; Freeman, 1994; Oslo Manual, 2006³)—; but there are non-technological and intangible innovations related to ISE (pg. the business model). Likewise, factors that impact the process of these entrepreneurships at different levels were located, which are classified in internal and external factors.

Even though evidence of different cases in the world shows the importance of ISE to improving standards of living in disadvantaged communities (Glucu, Dees and Anderson, 2006; Seelos and Mair, 2005; Peredo and McLean, 2005), this is still a subject that has hardly been studied in the literature. However, there are two emerging bodies of literature that contribute with analytical and / or explanatory categories to this phenomenon. The first one appeared in the late 90s and focuses on exploration and conceptualization of SE, usually from case studies (Dees, 1998; Weerawardena & Sullivan, 2006; Popoviciu & Popoviciu, 2011; Tandon, 2014). The second one emerged in the 2000s, and discusses the issue of innovations oriented to development and social inclusion (IDSI), showing significant progress in the exploration and analysis of the process of these innovations (Heeks, Foster & Nugroho, 2014; Rammani & Urias, 2015; UNDP, 2008; Alzugaray, Mederos & Sutz, 2012).

However, in both bodies of literature, there is still no accurate and consistent theoretical framework on the subject. It is for that reason that there is wide space to contribute to the

³ Refer to: http://www.conacyt.gov.py/sites/default/files/detiec/concurso/Manual_de_Oslo.pdf

understanding of how an ISE is carried out, and particularly on the factors that bring about the social and innovative nature in these entrepreneurship and how innovations created differ (or not) from business innovation.

This work aims to analyze holistically this process, from the identification of an unmet social need to the development and effective implementation of innovative solutions. The methodological design is based on a detailed case study (Yin, 2013), along with a structural-causal analysis for qualitative data (Pearl, 2009). The case study is Isla Urbana⁴, one of the greatest international recognized Mexican ISE's.

Knowledge about the main factors underlying a phenomenon like ISE, in which there is insufficient theoretical accuracy to analyze it, has great implications for directing strategically the endeavors of both public policy and management and lobbying activities in organizations / social enterprises. Moreover, to have greater understanding of the nature of innovations with social purposes can be extremely useful for creating business and political mechanisms that actually foster this kind of innovations beyond requesting an ambiguous "social impact".

This paper is organized into five sections. Following the introduction, section 2 outlines a framework on ISE, its possible determining factors and characteristics of innovation oriented to social objectives. Section 3 describes the research method used. Section 4 shows the case of Isla Urbana and analyzes the stages in its development process. In section 5, based on the empirical evidence, a (final) discussion is accomplished about the factors underlying the process of ISE and the nature of its innovations.

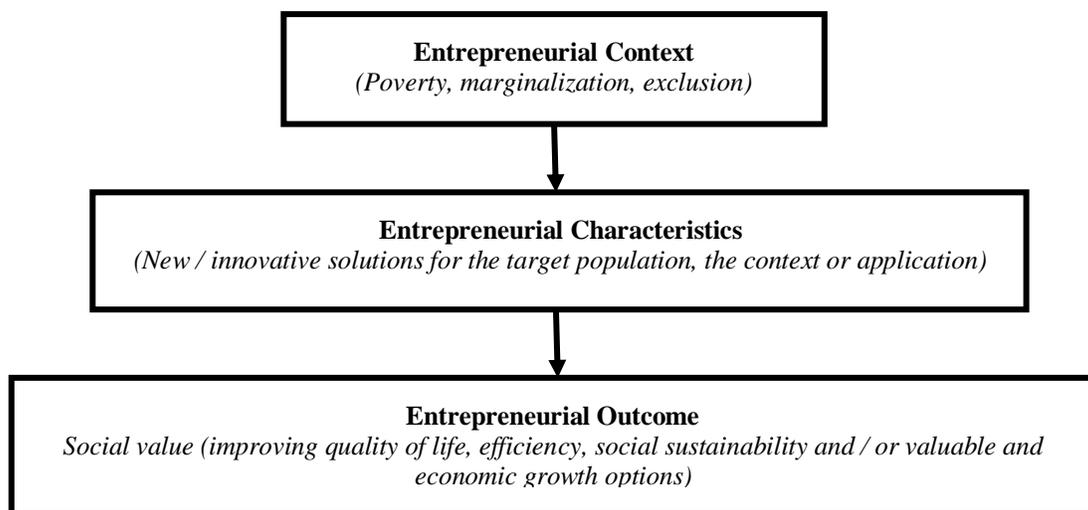
2 A Reference Framework about Social Entrepreneurship based on Innovation

Social purpose entrepreneurship and innovation is a topic of interest in the emerging literature about SE and innovations for development. On the one hand, SE literature, based on paradigmatic cases studies in poor countries, focuses on describing the characteristics of the cases in order to define this concept (which breaks with the traditional business model).

⁴ Civil organization committed to rainwater harvesting, whose mission is to fight against the serious problem of social exclusion and unequal access and distribution of water in Mexico.

SE concept refers to the process whereby social value is created, using business practices to address a problem or social need—which neither the market nor the government have been able to solve—. It is a number of activities undertaken to transform ideas into context-specific, and usually, environmentally friendly solutions and achieve social transformation (Dees, 1998). As an integral part of the process, these entrepreneurships involve, whenever possible, the generation of its own income as well as innovation, both incremental and radical (Tandon, 2014).

Figure 1 *Components of Innovation-Based Social Entrepreneurship*



Source: Taken and adapted from Popoviciu & Popoviciu (2011)

Several authors have studied the SE process from three perspectives. The first one focused on the study of the organization as the entrepreneurial unit (European Commission, 2014⁵; Brouard and Larivet, 2011; Tandon, 2014), the second one centered on the individual attributes of the social entrepreneur (Peredo & McLean, 2005; Ekington, 2008), and the third one covers a broader outlook of the ecosystem where these entrepreneurships emerge and develop (Dees, 2012; Austin, Stevenson & Wei-Skillern, 2006; Weerawardena & Sullivan, 2006). However, none of these perspectives have analyzed the SE determining factors in a multidimensional way, in which individual, organizational and external (imposed by the ecosystem) levels—which are not exclusive— come together.

⁵ Refer to: http://ec.europa.eu/internal_market/publications/docs/sbi-brochure/sbi-brochure-web_es.pdf

In addition, even though in these viewpoints innovation plays an important and even central role for the success of the SE, this is a term that has not been fully analyzed. In this literature, a definition of innovation can not be found, so there is neither a typology nor any attempt to distinguish between innovations created by SEs and the concept of dominant innovation (where innovations are generated by companies whose main purpose is economic profitability). Likewise, since 1998 with the work of G. Dees *"The Meaning of Social Entrepreneurship"*, it is mentioned that the SE implies a "blurring of the boundaries between the for-profit and the non-profit sectors." But this has also been an unattended subject by the literature on SE, where there is lack of clarity and consensus.

On the other hand, in parallel and without discussion with previous literature, the literature on IDSI has focused on the study of the internal process of these innovations. This stance has shown that innovation may not only be seen as a mechanism linked to economic growth and competitiveness (both at country and business level), under the supposition that it implies development— (Arocena & Sutz, 2012).

Despite its heterogeneity, this literature points out that IDSI process begins with identifying social needs of disadvantaged communities (Gras, Dutrénit & Vera-Cruz, 2017; Ramani & Urias, 2015). The leading player for the identification mentioned is the government, since it must foster social welfare, as well as having the ability to create (policy) mechanisms to promote innovation with a clearly social purpose (Alzugaray et al. 2012; Cozzens, 2006).

Authors like Arocena and Sutz (2012) show that the joint efforts between the government and the knowledge generator sector are critical for the knowledge obtained has an application on behalf of the most vulnerable population, and question the company as an actor who genuinely seeks social benefit (above economic). For these authors, the role of the company focuses on the scaling of the IDSI, responding to certain business opportunities identified by the corporation.

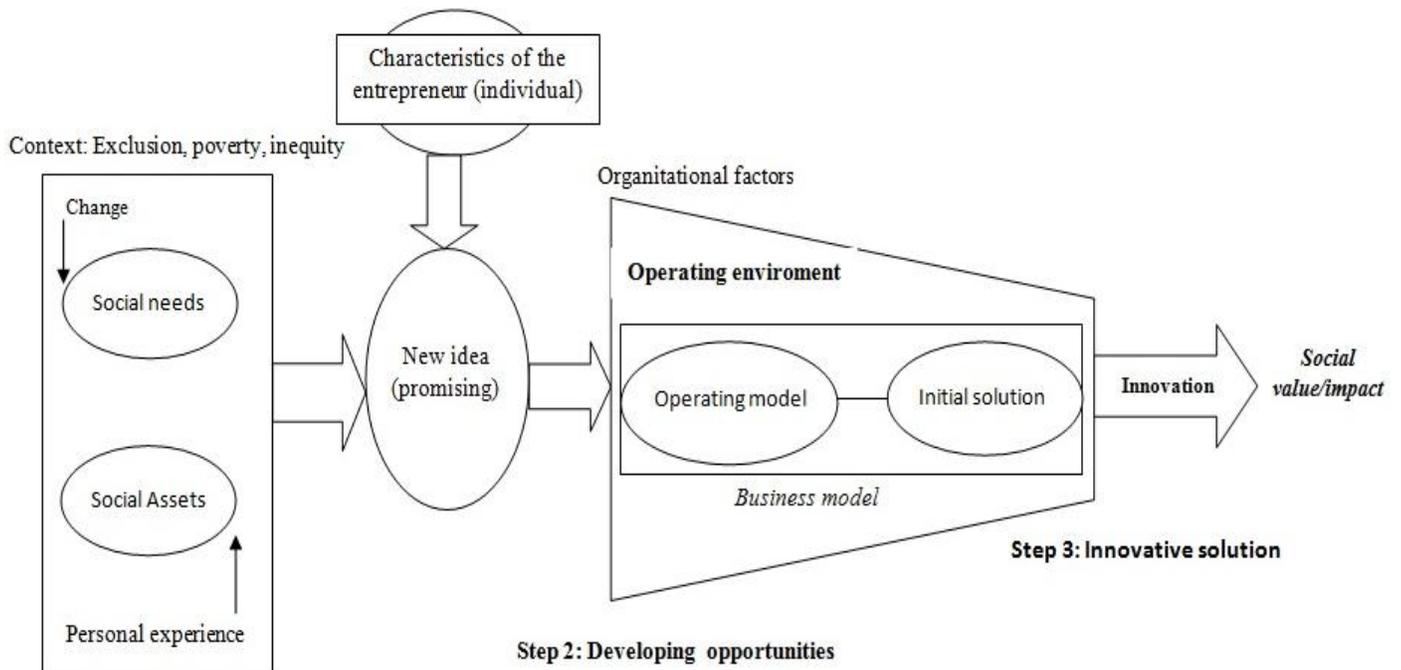
In addition, this literature suggests that innovation with social purpose is not only technological and validated by the market (once it has an application on a product that is actually traded). But innovation can also be included in products and services that do not go through an economic transaction but imply a novel solution in communities that can not

afford it (inclusive products). What is more, these authors notice the presence of processes in which innovation is created with the participation of the affected population, which already implies an innovation in itself (innovation in inclusive processes) (see Heeks et al. 2014). However, this trend has almost forgotten entrepreneurship as the original cause in creating innovations (as suggested by Schumpeter since 1911).

The dissociation between the two bodies of literature presented leads to a knowledge "gap" of the ISE. This gap is also caused by the lack of a consistent and accurate theoretical framework within each body of literature. This is why there is wide space to contribute to knowledge, especially on the factors that cause the development process of an ISE, just as the nature of innovations created from such entrepreneurships.

The figure 2 below explains a conceptual framework regarding ISE, shown as a process with different development stages. It is worth mentioning that the stages in the figure are shown in a linear way, but in fact it is a dynamic process with continuous feedback between stages.

Figure 2 *Conceptual Framework of Innovative Social Entrepreneurship Process*



Step 1: Definition of the problem

Source: Own elaboration, based on the literature consulted

3 Research Method

3.1 A Mixed Methodology

Since the ISE is an emerging and under construction topic, the use of literature is just a baseline for empirical exploration. According to Morse (2003), research problems with an "immature" concept as a result of the theoretical imprecision or lack of empirical evidence, is one of the main arguments for exploratory-descriptive qualitative research.

This paper aims to explain questions about the process of ISE in order to deduce its determining factors and show the nature of innovation in this analysis framework. The research strategy is based on the combination of a detailed case study, which follows the methodology proposed by Yin (2013), and a structural-causal analysis for qualitative data (Pearl, 2009).

In order to get a detailed approach to the research problem, the case study is exploratory and holistic (Yin, 2013; Leonard-Barton, 1995). The case is Isla Urbana⁶, a Mexican civil organization, established in 2009, with a large national spreading and international recognition. Three sources of evidence were used: focused (semistructured) open interviews, documents and direct observation.

Approximately 25 interviews with various collaborators of the organization at different hierarchical levels were made, including Isla Urbana's founder, project co-developers (management positions), and operational / administrative collaborators as well as project beneficiaries. The interviews lasted between one and three hours and some of the surveyed were questioned more than once.

The interviewees were asked to tell stories about the stages of Isla Urbana development, since the idea of its creation and first implementations, to its current status. Interviews were focused on the distinctive characteristics of the project, changes over time (technological and non-technological), as well as the critical factors or trends that caused these changes. In addition, they were requested to give specific examples of innovations, in terms of what the organization considers it to be (models, strategies, products, etc.)⁷.

The case was chosen because of its broad alignment with the theoretical analysis on SE as well as a strong component of various types of innovation (product, processes, business model, organizational). Therefore, it is a revealing case as it allows to verify the existing theoretical developments.

Likewise, the structural-causal analysis allowed that the case results could be analyzed holistically as well as a more reliable connection between empirical evidence and theoretical approaches. The basis of this method consists in grouping the relations between a great number of variables in a few factors of analysis, based on the set of elements and relationships that characterize the specific phenomenon (Pearl, 2009).

⁶ Refer to <http://islaurbana.org>

⁷ Multiple sources of information were used, chains of evidence were established, and the draft report of the case study was reviewed by key informants (some of them interviewed) in order to prevent subjectivity of the researcher.

Blalock (1961) mentions that the main rules to establish that a factor determines a certain situation (causality) are: *universality* (all effect has its cause), the *need* (given the necessary and sufficient conditions the effect necessarily occurs), the *univocal nature* (at certain causes, certain effects) and *succession over time* (the cause always precedes the effect). These rules are taken up in the analysis of the evidence.

While causality is specific and explains a certain reality, under a particular time and space, this method allows an analytical replication to other contexts and / or study cases (taking into account their special features). In addition, although the case studies do not enable statistical generalization, the depth and detail of these studies allows to generalize the results analytically from testing the theory and understanding the "how" of complex social processes (Yin, 2003). So, the study results "feed" the theoretical approaches, and lay the foundations for new analytical categories, concepts and / or causal explanations.

In summary, three analytical techniques were used to organize empirical evidence: chronologies for understanding the sequence of events; matrix structural analysis for grouping together and systematize the determining factors of ISE, its effects and the features of the identified innovations; and a path causal for styling ISE development process, according to its determining factors.

3.2 Case Profile

Isla Urbana is a pioneer in implementing —to scale— rainwater harvesting systems in Mexico. To date, this organization has installed more than 3,000 collection and purification water systems, benefiting 25,000 people approximately and harvesting more than 85 million gallons of rainwater annually.

Isla Urbana project has been worthy of several national and international awards⁸. Therefore, it has great prestige and dissemination, as well as an extensive collaborative network with numerous national and international agents (such as other entrepreneurships

⁸ Some of the awards received are: "Young Entrepreneur" Merit Award (2015), by the *Instituto Mexicano de Mejores Prácticas Corporativas* (Mexican Institute of Best Corporate Practices; Changemaker Ashoka Fellowship (2012-2015); Momentum Project, by BBVA Bancomer for "Innovation and Scalability in Social Entrepreneurship" (Mexico, 2014); Finalist in the BBC World Challenge, England 2010; Finalist at the UN-Water, Spain 2011.

and social organizations, ISE global supporting organizations, private companies, etc.). Systems designed and installed by Isla Urbana are conceived for vulnerable communities living in very precarious conditions. One of its main attributes is the low cost of these systems, which makes them affordable for most people. The equipment and materials used are simple (usually recycled and / or renewable equipment), but good quality and high durability.

Currently, Isla Urbana has approximately 30 (full-time) employees. It is an organization with a vertical and highly flexible structure promoting the creation of ideas and feedback on all its employees or collaborators. This organization implements a hybrid business model, thus, it can combine a business aspect to provide the market with sustainable rainwater harvesting systems and, simultaneously, to maintain the social aspect of the project (through which it was created). Therefore, harvesting systems have spread through this model to various socio-economic contexts.

Those communities benefited free belong to marginalized municipalities strongly affected by water shortage and poor quality. Isla Urbana has implemented 6 field projects in indigenous and rural communities (in extreme poverty); over 3,000 dwellings, 6 rural schools, and 1 shelter have benefited. The city systems installed have been implemented in 3 healthcare centers (in hard-to-reach areas), 4 schools, 500 dwellings and 3 community water treatment plants (each with more than 48,000 gallons (180,000 liters drinking water harvested per year).

These projects have been funded through support and collaboration of local governments (such as the government of Mexico City, the *Secretaría de Ciencia y Tecnología* [the Ministry of Science and Technology] and the SEMARNAT⁹), supporting companies and organizations (IRRI, Ashoka, HSBC, Bancomer, etc.), volunteering and donations, economic permits obtained, and proceeds from sales to individuals and members' shares.

⁹ *Secretaría de Medio Ambiente y Recursos Naturales* (Secretary of the Environment and Natural Resources [SEMARNAT]): <http://www.gob.mx/semarnat>

4 Innovative Social Entrepreneurship Development: Stages, characteristics, and related facts

The case of Isla Urbana illustrates the process of an almost-unexplored-by-literature phenomenon, showing the factors/facts determining entrepreneurship's social and innovative nature. This section analytically describes Isla Urbana's development process. This process's development stages and key facts linked by the action and interaction of various actors are given special attention.

4.1 Defining the problem and creating new ideas (2005-2009)

The 2000s involved a paradigm shift on growth and development issues. The beginning of this decade was framed by the Millennium Summit of the United Nations and by setting the Millennium Development Goals to fight poverty, hunger, environmental degradation, illiteracy, among other major social problems.

Within this framework several disciplines focused on new technologies and new materials have emerged. Such disciplines are strongly addressed to the application of knowledge to solve (social and sustainable) development problems beyond "science for science". In 2005, at Rhode Island School of Design, USA, Enrique Lomnitz and Renata Fenton — two young Mexican-descent students — studied Industrial Design. In their (joint) thesis, they focused on Mexico's low-income housing self-construction in marginalized areas, where serious water shortage and poor quality problems arise, as well as frequent floods.

Their thesis raised the following issues: i) depletion of Mexico City's aquifers (which, according to the UN, are overexploited at 40% of their natural capacity so that, on average, this city is sinking 0.40 inches (1 cm) annually); ii) the high cost for transferring and purifying water from the outskirts of the Valley of Mexico; iii) only 47.5% of the collected wastewater is treated, and only a very low percentage (difficult to define due to the lack of monitoring and surveillance) meets quality standards. Paradoxically, every year rains on this city 200 gallons (743 liters) of rainwater per 10 ft² (1 m²), equivalent to 290 million gallons (1.1 billion liters) per year—i.e. 90 gallons (340 liters) of water per capita, an amount of water that was almost entirely wasted.

Their research led to a new proposal for solving this issue: a system to harvest rainwater in low income self-constructed housing. Therefore, in 2009, when concluding their studies, Enrique and Renata returned to Mexico with the idea of implementing their rainwater harvesting idea. That year they contacted Carlos Moscoso, an experienced plumber (and Enrique's uncle), who already was making very simple rainwater harvesting designs. Enrique, Carlos, and Renata became partners (albeit informally) to design, produce, and install pilot rainwater harvesting systems. This family partnership was called Isla Urbana, which within some weeks installed its first system at a marginalized spot in Mexico City (CDMX) (today this system is still in operation, supplying a family with water for 8 months a year).

The harvesting system designed consisted of some plastic pipes installed on the roofs of houses, then connected to a *cisterna* (underground water tank) and a *tinaco* (external water tank). Before the rain gets into the *cisterna*, there is a first water separation process by a first solid filter, as the first few minutes of rain are the ones that drag air and roof pollution. When the water that reaches the *cisterna* is used, it is pumped into a *tinaco*, but before that, it is purified with two filters (the first one, a solids retention based on deposits, and the second one, a carbon cartridge which removes any odor, color or taste of water), and finally a chlorination process is carried out. The water obtained can be used for any home use, however, a purifier with greater power is added in order to make it drinkable. The proper use of this system can provide a home of 6 to 8 months of water per year.

4.2 From the idea to the initial implementation: Formalization of ISE (2009-2010)

Mexico City was chosen as the main market for Isla Urbana, or rather, the action context, due to the identified problems and the shortfall and inefficiency of the public system, mainly in marginalized and inaccessible neighborhoods (isolated on hills). Low-income areas of Mexico City and its metropolitan area constitutes 70% of its total population (+/- 25 million people, INEGI 2016), which is the most affected sector by problems associated with water.

For a better understanding of the problem, Carlos and Enrique moved to *Cultura Maya*, a district in the south of Mexico City (in which its first system was installed). Over 30

installations were carried out (only material was charged, which in turn was acquired mostly in building materials stores in the same district). Systems installed in *Cultura Maya* can be seen as a pilot model, which predates the formalization of this social entrepreneurship unprecedented in Mexico. In the same 2009, Isla Urbana was legally formalized as a (non-profit) Civil Organization, with four other partners joining and forming an interdisciplinary group with very specific attributes:

- High academic background (except Carlos): Enrique and Renata (industrial designers, trained in the US), Carmen (social anthropologist from UAM, a Mexican public university), David (Penn State University, his master's thesis was focused on water harvesting), Jennifer White (Penn State University, geographer focused on urbanism), and Hiram (environmental engineer from UNAM, Mexican public university).
- Young people whose age did not exceed 30 (except Carlos)
- Reasons related with a social and environmental concern: Mexico's water problem.
- High degree of ingenuity/imagination and risk confrontation to undertake a socially brilliant idea, but impractical in market terms due to the characteristics of the target population.

Isla Urbana's formalization was achieved with the (financial and management) support of the International Renewable Resources Institute (IRRI), which that year granted it a scholarship after winning its sustainable water management annual contest. Since in Mexico there is no legal figure that can combine economic profits with social purposes, civil organizations face an institutional barrier regarding generating their own income not fully reinvested in the organization itself, but that can support founders and pay both their employees' salaries and their (free) social projects.

The problem of funding the production and implementation of systems in communities that could not even pay the cost of production, led the partners to establish a second company (in late 2009). Such company, called Solución Pluvial S.A. de C.V., is Isla Urbana's "self-income". Therefore, this project resulted in two different organizations, but pursuing the same social purpose. Operationally, Isla Urbana A.C. conducts harvesting projects for low-

income communities— with no access to this vital resource¹⁰; and Solución Pluvial S.A. de C.V. sells the systems for those customers who can afford them through the market (individuals, private companies, and public institutions/bodies¹¹).

Isla Urbana is in charge of the design and research of the harvesting systems offered by both organizations. Likewise, it imposes the dynamic conditions for more efficient, less expensive, and higher quality and long-term systems. Its founders affirm that “the ongoing improvement of their systems is due, by more than 50%, to the close relationship Isla Urbana has with the beneficiary communities”, which represents the main source for technical, technological, and strategic development of this organization; while ensuring a successful adoption and proper use of the installed systems.

4.3 Expansion, spreading, and diversification: Technological development period (2010-2017)

In 2010, Isla Urbana began its first major project, in cooperation with the government of *Delegación Tlalpan* (an administrative borough of Mexico City, which provided Isla Urbana with the relevant permits and some funds). This project led to the installation of rainwater harvesting systems in the underdeveloped area of cerro del Ajusco (Ajusco hill). Also, this year it participated in the BBC World Challenge, and it is beginning the Ha Ta Tukari Project¹², in the sierra Huichol (Huichol mountains) of Jalisco, together with ConcentrArte¹³, a non-profit organization. This year, the design of the initial system has been improved—replacing the first sediment-based rainwater filtration with activated carbon filters significantly improving water quality and the entire system's efficiency.

¹⁰ Most of the people served by Isla Urbana have water access by *pipas* (water tankers). However, there are some populations with no water tankers (due to difficult access), so water is carried by carboys filled from a community faucet, generally 2 miles (3 or 4 km) away. This involves a significant time investment, as well as loss of income, since people often cannot work when waiting for water tankers.

¹¹ In Mexico City water is highly subsidized by the Government (between 80 and 90% of its actual cost), therefore, one of its main customers are government agencies, as these agencies take over actual costs of water.

¹² For further information see:

<https://www.facebook.com/media/set/?set=a.418933161486405.89165.145664675479923&type=3>

¹³ See: <http://www.concentrarte.org/>

In 2011, works at Ajusco and sierra Huichol continued, taking part in the Iniciativa México program; thus, the project was spread nationwide. This year, the Tlaloque¹⁴'s design was made, with the purpose of harvesting rainwater more effectively and practically. This resulted in water quality improvement due to a more efficient filtration and disinfection system, attaining a product innovation (one of the most important innovation of the systems designed by Isla Urbana).

In 2012, supported by the HSBC Corporate Sustainability area, Isla Urbana reached other *delegaciones* (administrative boroughs) of Mexico City. The first Tlaloques were produced at a larger scale. Also, systematic studies were conducted in collaboration with IIRI México and Ingenieros Sin Fronteras¹⁵, in order to understand how to maximize the adoption of such systems. This was based on a strong approach with the communities where rainwater harvesting systems had been installed, allowing them to understand better the needs and challenges the people was facing regarding the use of (feedback) systems.

That very year, Isla Urbana joined the Ashoka¹⁶'s social entrepreneur network—one of the major networks to promote the ISE worldwide, providing it with certain prestigious status and a wider spreading abroad. As of 2013, Isla Urbana devoted to improving the systems. It kept doing installations in Mexico City, and began working in sierra Mazateca (a highly mountainous and isolated area in Oaxaca, Mexico). This year, Isla Urbana was recognized by the MIT Technology Review¹⁷ as one of the world 's 35 innovative projects led by young people.

It started to look for ways to include environmental education workshops, to promote holistic systems not only based on technology but on community work; which in turn would ensure an effective adoption and an emotional bond based on awareness of rainwater harvesting (an expanding model nationwide).

¹⁴ Tlaloque is a small water tank for storing and discharging water of the first rains. It is made out of highly resistant and inexpensive material (plastic and fiberglass). It has a prism-shaped design, taking up little space, and storing up to 55 gallons (210 liters) of water. Harvested water is automatically discharged through a drain hose. Despite this device was designed for self-built dwellings, it can harvest rainwater in roofs of up to 460 feet (140 meters) high. Therefore, it can be installed even in buildings and businesses. Likewise, Tlaloques have been produced in three different roof sizes ranging from 32 ft² (3m²).

¹⁵ See <http://sinfronteras.org.mx/>

¹⁶ See <https://mexico.ashoka.org/>

¹⁷ See <https://www.technologyreview.com/>

In 2014, a project with SEMARNAT was conducted in the state of Hidalgo. This project included 106 harvesting systems, gray water filters, and an intensive community work in collaboration with ConcentrArte. In addition, this year it attained that all the community dwellings of the Ha Ta Tukari project may have access to harvested rainwater through community collection systems (with *cisternas* [underground water tanks] designed and developed by Isla Urbana together with the people of the community). At the end of the year there were over 2,000 systems installed.

In 2015, it collaborated with the *Secretaría de Ciencia, Tecnología e Innovación de la CDMX* (SECITI¹⁸) (Ministry of Science, Technology, and Innovation of Mexico City), installing 150 new systems in rural households in Mexico City and the State of Mexico's outskirts, as well as 50 systems in the city of Oaxaca, collaborating again with ConcentrArte and Artsolution Foundation.

During 2016 and 2017 the communities served have been monitored; over 600 new systems in underserved communities and in some schools have been installed. Also, since 2016, training courses of water harvesting (accessible to all), as well as environmental and art workshops are — officially — taught in underserved communities. Currently, there are over 3,000 systems installed, benefiting about 25,000 people, and 85 million gallons (322 million liters) of water harvested annually.

Today, Isla Urbana offers over 60 products and 6 water collection and purification services. The adapting/reuse ingenuity and the diversification of activities, processes, products, and services have been the main basis of this organization's success. Over the years, the development of rainwater harvesting systems has been constantly improved and adapted.

In addition, Isla Urbana provides professional harvesting services, monitoring services for an efficient operation of the systems (direct observation-communication, development of manuals and instructions, etc.), as well as water and the environmental conservation workshops, achieving constant expansion and diversification. Started as a family-owned organization, now Isla Urbana provides about 30 formal jobs (11 operational employees, 11 managers, and 6 senior managers). In the implementation, senior managers carry out

¹⁸ See <http://www.seciti.cdmx.gob.mx/>

fieldwork and support operational employees; that is to say, it is an organization with a fully vertical and flexible structure that promotes the creation of ideas at all levels (despite senior managers make strategic decisions).

5 Discussion: ISE determining factors and nature of its innovations

5.1 Underlying factors in generating an ISE

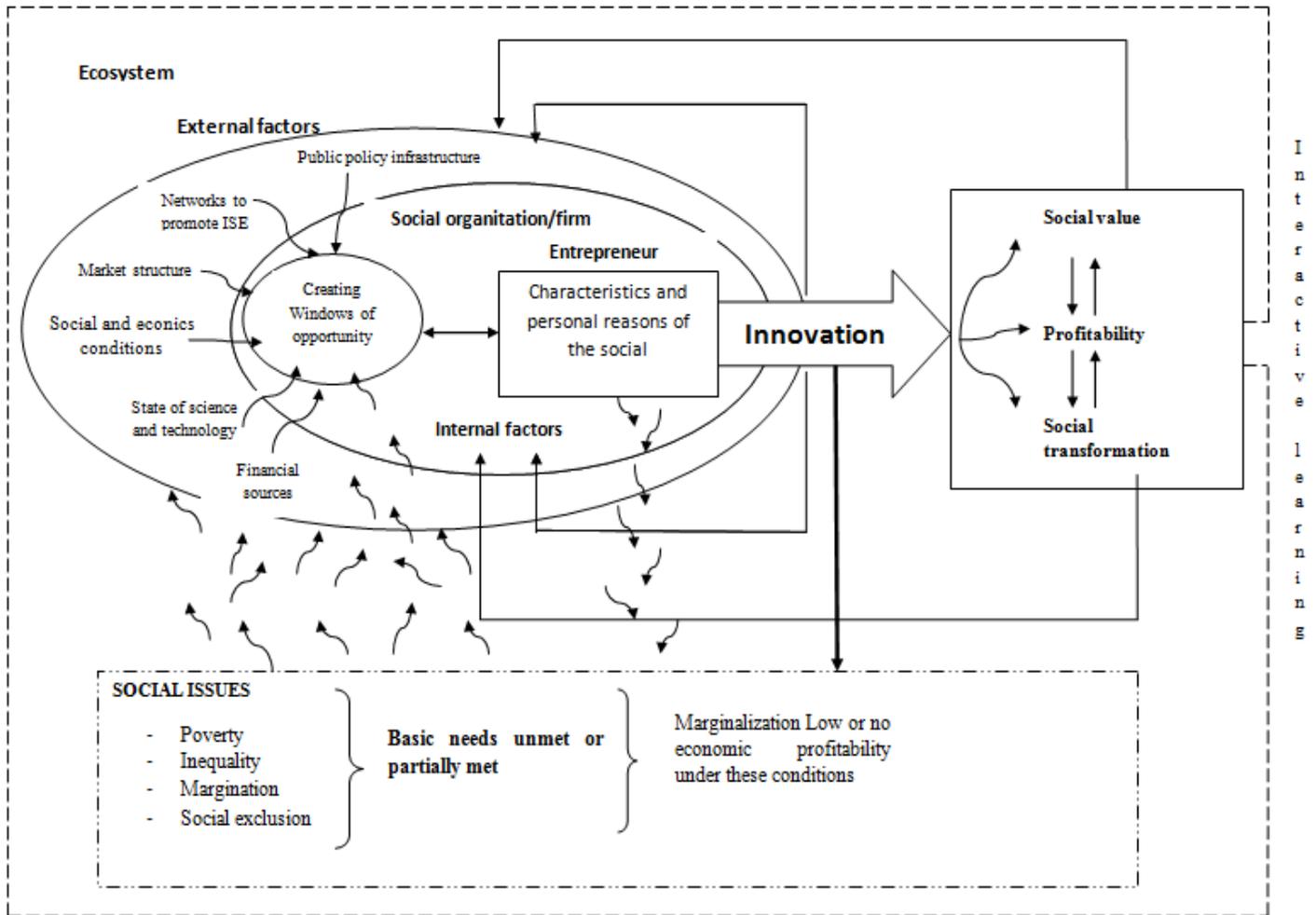
The case of Isla Urbana shows a number of factors that determine the evolution of an ISE. These factors are obtained from key actions and/or facts in each of the stages of this development process. Components directly linked with the entrepreneurship itself were identified, i.e. internal factors associated with the individual characteristics of the entrepreneur(s)¹⁹ and/or the organization. Such factors are at the ISE's central core, and are crucial in defining specific social needs, perceived not only as a problem but as a window of opportunity to undertake a socially viable solution.

However, there are other factors not dependent on the entrepreneur and/or the organization, associated with the ecosystem or context under which the ISE operates (Weerawardena and Sullivan, 2006). As described in paragraph 4, in the case of Isla Urbana, support and funding provided by not-for-profit organizations and government agencies have been a key factor to turn an idea into a real solution and to its domestic and international spreading and recognition.

Figure 1 below shows the development process of Isla Urbana, considering the various factors determining this process. As discussed in Section 2, the consolidation of this type of entrepreneurships is carried out by generating social value (Tandon, 2014). However, the economic return is a desirable option for the the long-term sustainability or organization of the project, as well as for increasing social value and achieve real changes in the communities served (although said return is not its primary objective).

¹⁹ For example, Isla Urbana founders' training and education level was instrumental in the type of proposed solution—a radical innovation in a product design.

Figure 3 *Decisive Factors in an ISE Process*



Source: Own elaboration, based on the literature consulted

Social problems, such as inequality and social exclusion, are the primary trigger of the ISE. These problems define social needs, such as accessing basic goods and services (health, education, water, etc.). Social needs “urge” the generation of innovative solutions, but considering a particular context: needs that (apparently) are not attractive in market terms. Therefore, their attention hardly comes from large companies whose main purpose is the (growing) generation of economic returns.

Such needs are understood by certain individuals who break away with the dominant economic-business paradigm. Enterprising individuals with very specific characteristics (such as being determined, proactive, and risk tolerant), but having a strong social concern.

In this case, the water problem was analyzed by a group of young people with a high level and a specialized academic education and a common interest for solving this problem in Mexico.

It is therefore not enough to identify and define a social problem—it must be turned into an opportunity for implementing a novel solution. In turn, this opportunity can also be defined by external factors, such as the support/funding provided by not-for-profit organizations for entrepreneurs with innovative ideas aimed at a certain subject (for instance, the IRRI was a cornerstone in the Isla Urbana's creation and spreading).

Public policy infrastructure is also a determining factor in the development process of an ISE, especially as for prototype stages. Plans and programs of STI policy and social policy have the potential to create windows of opportunity for this type of entrepreneurs (through financial support and/or public procurement)²⁰ (Cozzens, 2006). Nevertheless, politics and institutional conditions can also hinder the ISE. In the case of Mexico, the lack of a legal figure allowing hybrid models meeting the social objective and, in turn, making their founders to earn their living, causes many social projects to “die” at an earlier stage, either because the founders have no other option but to find another activity to generate income, or because their own resources/savings do not allow them to carry on.

Thus, factors considered as determining can play a dual role: creating favorable opportunities and conditions to promote ISEs or to hinder their development. Considering the foregoing, this is essential and necessary to identify these opportunities and/or “overcome” environmental obstacles, as well as to generate a greater social value, economic return and/or structural social transformations.

Therefore, innovation — in the SE analytical framework — has a positive impact on mitigation of social problems, which also impacts on the ecosystem conditions and on the perception of new problems or social needs. The cycle created during this process is part of

²⁰ One of the first Isla Urbana's projects (at cerro del Ajusco, Mexico City) was funded by the local government of Delegación de Tlalpan. Also, SEMARNAT supported one of its most important and larger-scale projects at the sierra Huichol of Jalisco (with 150 harvesting systems installed).

an interactive learning space, where several actors participate and collaborate, allowing constant feedback and learning²¹.

5.2 Relationship between ISE determining factors and the nature of its innovations

The set of (internal and external) factors — present in an ISE's development process — is subject to the nature of the innovation generated by these entrepreneurships. The design of the rainwater harvesting systems was a product innovation, largely determined by the academic education of its founders (internal factor), but also by the socio-economic conditions of a specific population (external factor). Furthermore, adaptations and improvements to these systems were caused by the approach with the beneficiary population and its active participation. For example, it was identified that there were people with certain abilities who have self-built their homes, allowing bidirectional feedback and learning.

Access to not-for-profit organizations networks is an extremely important (external) factor in the ISE's emergence. This factor has allowed Isla Urbana to spread its idea abroad, to access multiple sources of funding, and to be in contact with other social organizations such as ConcentrArte and Sistema Bio-bolsa; these aspects have been complementary to achieve a holistic social impact, beyond rainwater harvesting²².

Table 1 shows an analytical generalization regarding the effects of the main factors associated with the ISE's process, from the problem definition to the implementation of solutions. The last column shows the types of innovations that have emerged as for each of the identified determining factors.

²¹ One of ISE's features is the great diversity of involved actors during all stages of development—from the social entrepreneur, the Government, private sector companies, not-for-profit organizations (both national and international), civil society (volunteering and philanthropists) to the beneficiary population. All of them play a fundamental role in the ISE's emergence, expansion, spreading, consolidation, and sustainability (Dees, 1998; Ramani & Urias, 2015).

²² ConcentrArte has collaborated with environmental awareness, art, and education workshops, and Sistema Bio-bolsa with the implementation of animal waste systems transforming waste into bio-fuel and bio-composts (in rural communities served by Isla Urbana).

Table 1 *Decisive factors of the ISE and their effect on creating innovations*

<i>Factor</i>	<i>Effects</i>	<i>Type of Innovation</i>
<i>Internal</i>		
Personal characteristics and reasons	Influencing: <ul style="list-style-type: none"> - ISE's main purpose and the definition of the problem; - the space/territory and context of action (scope) - the initial idea of solution (strategy, choice of technology, etc.); - the conversion of an idea into a reality (overcoming of risks and obstacles); - the degree of novelty of the solution 	Radical/disruptive innovations of: <ul style="list-style-type: none"> - product or service - niche(s) of users and beneficiaries - business model - form of organization (hybrid)
operation-action model or strategy	Determining: <ul style="list-style-type: none"> - opportunity identification; - the (internal) financial viability of the project; - the entrepreneurship or organization sustainability; - the effective adoption of the offered solution - the degree and type of social inclusion 	Incremental innovations and/or ongoing improvements: <ul style="list-style-type: none"> - products or services - processes - the business model - organizational Inclusive process innovation
Social inclusion of the affected population	Allowing: <ul style="list-style-type: none"> - to identify and understand the needs and characteristics (deficiencies, customs, other problems associated with the beneficiaries, etc.); - to know the problems associated with the use of or understanding the provided solution (whether or not technological) (bidirectional feedback and learning); - generation of emotional belonging and/or bonds; - the effective adoption of the proposed solution 	Incremental innovations and/or ongoing improvements: <ul style="list-style-type: none"> - products or services - processes - the operational structure and model
Business model	<ul style="list-style-type: none"> - Delimits or eliminates dependence on external resources; - determines financial viability and sustainability (or non-sustainability) of the entrepreneurship in the long term; - it is a determining factor for achieving self-sustainability of the entrepreneurship or organization 	Radical or incremental innovation of: <ul style="list-style-type: none"> - business model - organizational - market niches - product (differentiation)
Size and internal structure of the organization	A key for: <ul style="list-style-type: none"> - creating new ideas at all levels of the organization (either for the initial solution and for improving the already implemented ones); - the adaptation to changes in the conditions of the context; - the diversification of activities/products/services - the scope of the solution (impact); - the diversification of funding sources 	<ul style="list-style-type: none"> - New or improved products or services - New or improved processes - Organizational innovation - Innovation in funding sources

External	Public (social and STI) policy infrastructure	<ul style="list-style-type: none"> - Acts as a driver or an obstacle to the emergence of ISEs; - involves a strategic ally for effective viability and implementation of innovation in vulnerable and unprofitable contexts; - one of the main funding sources; - accelerates or slows down the process of development, adoption, and spreading of innovations 	Radical/disruptive innovation in product or service
	Diversification of funding sources	<ul style="list-style-type: none"> - Determines conversion of an idea into a viable reality; - key for entrepreneurship sustainability (especially in the early stages of development and primary spreading); - accelerates the generation of new outcomes and social impacts (due to the demand for results or to the commitment made); - urges the generation of economic returns (self-sustainability) 	<ul style="list-style-type: none"> - Innovation in the source of resources - Organizational innovation - Continuous or incremental innovation in the action strategy or operating model - Improvements in the business model
	Access to (national and international) networks for the ISE	<ul style="list-style-type: none"> - It facilitates the diversification of funding sources and access to resources for the development of the ISE; - promotes engagement and collaboration of different ISEs, social organizations, and companies interested in the projects - strengthens holistic social impact or impacts on various fields; - promotes the generation and exchange of ideas and action strategies; - allows adaptation of solutions into other contexts 	<ul style="list-style-type: none"> - Ongoing improvement of products and services - Process innovation - Radical and/or incremental innovations by adaptation - New spreading forms
	Market structure (competition, supply and demand)	<ul style="list-style-type: none"> - Creates windows of opportunity; - determines the scope of the solution (subject to demand); - urges the generation of skills with the purpose of diversifying funding sources and achieving self-sustainability 	<p>Radical/disruptive innovation in product or service</p> <p>Ongoing improvements of:</p> <ul style="list-style-type: none"> - products - organizational - processes - business model - market niches
	Specific socio-economic conditions of the community served	<p>Imposes conditions for:</p> <ul style="list-style-type: none"> - the type of solution needed - materials and technology to be used (in the case of products) 	<ul style="list-style-type: none"> - Radical/disruptive innovation of products or services - Innovation in the action model - Innovation in the business model
	Scientific-technological conditions	<p>Imposes conditions for:</p> <ul style="list-style-type: none"> - The characteristics of the initial solution - progress and improvement of materials and technology used 	<p>Radical and incremental innovations in:</p> <ul style="list-style-type: none"> - products - new materials and supplies

Source: Own compilation

In the case of Isla Urbana, its internal structure has led to the creation of new ideas for its products improvement. Its strategy or operating model has been essential to keep an emotional and feedback bond with the communities served, making possible the creation of incremental innovations to improve and ensure the adoption and proper use of the installed systems. Therefore, one of the main sources of innovation is the population inclusion in its processes and activities.

The complexity of the problem to be solved with this project, as well as the context conditions, led Isla Urbana to implement a (business) hybrid model, providing the project with a business aspect offering rainwater harvesting systems in the market but still following its social mission. This model has enabled own income generation, considering that — in the future — it would be possible to reduce current dependence from external funding and, under the best-case scenario, to achieve self-sustainability of the organization. Also, its hybrid model allowed it to overcome the institutional Mexican obstacles regarding a social-purpose organization's legal forms. This implied an innovation in its business model, as well as an organizational innovation.

Most innovations created by Isla Urbana neither match with conventional market mechanisms nor with sources related to the high-tech border or to R&D departments. This is the reason why its valuation is not — only — on its financial performance, but on the social value generated and on its effective acceptance and adoption (validating mechanisms).

To sum up, innovation is necessary for the viability and sustainability of social entrepreneurs going beyond market risk. ISE innovation focuses on strategies to promote the effective adoption of technology in community work and it is a close link with the beneficiaries, which goes far beyond a (simple) technology transfer. For the foregoing, (radical and incremental) ongoing innovation, both technological and tangible (of products, services, and new materials), and technological and intangible (e.g. business model and operating models or strategies and social inclusion) are required.

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