

Social Innovation in Brazilian Social Entrepreneurships: A Proposal of Scale for its Measurement

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ABSTRACT

Social entrepreneurship and social innovation have gained particular attention of policy makers, academics, and practitioners since the year 2000. The types of social innovations described in the literature are product, process, marketing and organizational; and its depths are disruptive, institutional and incremental. As this area of knowledge is still incipient in the present literature, this study has the objective to deepen the knowledge about social innovation and verify the depth at which it occurs, the types of social innovation generated by social entrepreneurships, and its geographical occurrence by developing a scale. To reach this objective we developed the following research question: How to measure social innovation generated by social entrepreneurships in terms of geographical coverage, depth and typology, in the perspective of social entrepreneurs? To answer this question, we developed a scale and made two validations: content and psychometric. After developing the scale, we applied it to 264 social enterprises in the 27 confederative units of Brazil. The statistical techniques used, besides descriptive analysis of frequencies and measures of central tendency and variability, were exploratory and confirmatory factor analysis. The results point to the development of a validated scale consisting of 23 items that measure and identify social innovations of product, organizational and marketing, of incremental, disruptive and institutional depths and of local, regional, national and global coverage. The results also indicate that the types of organizations present in the sample were mostly of Associations, followed by Enterprises, Foundations and Cooperatives. Most of the social entrepreneurships operate in a community or city, others in a region, in a country, and a few of them in some countries. The sample has the majority of the organizations headquartered in São Paulo followed by Rio de Janeiro and Minas Gerais. Disruptive social innovations were the most outstanding depth observed in the sample and cooperatives were the type of organizations that showed the highest percentage of disruptive innovations.

Keywords: Social innovation, scale, social entrepreneurships

INTRODUCTION

Social entrepreneurship, commonly defined as an entrepreneurial activity incorporated into a social purpose has been presented as an important economic phenomenon which has been observed on a global scale (Austin, Stevenson & Wei-Skillern, 2006). Unlike traditional entrepreneurship that offers numerous resources for measuring its impact, social entrepreneurship is typically measured qualitatively. In this sense, some studies, for example, the one of Comini (2016), have been conducted with the purpose of analyzing social innovation generated by social enterprises. If the economic globalization offers opportunities to improve living conditions, it also implies in a continuous and substantial restructuring of changes, especially in times of crisis. The competition continues to increase, and as a result, all areas should engage more strongly in innovations, both in social as well as technological. But, differently of technological innovations that have many studies in the literature, the researches of social innovations are still incipient, especially concerning quantitative studies (Comini, 2016). This gap in literature was what encouraged us to develop a scale to measure and map social innovations in social entrepreneurships.

Few social phenomena have attracted so much attention, since the years 2000, as the pursuit of reducing world poverty and improving world health. This framework is not only a

result of the economic prosperity but also of governmental and/or non-governmental organizations' actions which have the intent of rescuing people living on social vulnerability and insert them in society, ensuring rights and a dignified life.

We believe that Governments themselves are not able to solve all the social and environmental problems. Thus, traditional organizations begin to have a special look also targeted to the social. Many of them include in their activities some kind of business oriented to the lower classes. This movement, studied by several researchers (Balut et al., 2013; Moulaert et al., 2013; Comini, 2016), starts a new era of management models that once sought in philanthropy a way to help these people.

As an alternative to this model, the concept of social entrepreneurship seeks, often by market logic through innovations, to meet these people needs that were not attended yet. Thus, as we noticed in literature a lack of tools able to better understand social innovations generated by social entrepreneurs, this paper presents the following research question: How do Brazilian social entrepreneurs identify social innovations in terms of typology, depth and geographical coverage?

Social entrepreneurship which is a practice that integrates economic and social value creation through innovation has been the focus of organizational studies in several countries (TEPSIE, 2016). Entities, such as the Ashoka, created by Bill Drayton in 1980, supports entrepreneurs who desire to support and cooperate with the vision of the entity, which is to build a world in which all people can be agents of transformation and so, apply skills to solve social problems through social innovation.

It is observed that this trend intensifies in developing countries such as Brazil (TEPSIE, 2016). However, although there are several works that study this phenomenon, there is no one with the objective to measure and classify this type of innovation that is capable of generating social value. This finding was made after conducting a systematic analysis of the literature on scales of measurement of social innovations generated by social entrepreneurs and it has not been observed in the available literature any study with that purpose.

We believe that there are at least six reasons to face the challenge of understanding how social entrepreneurs realize the social innovations that their activities utilize to achieve the purpose of having social and/or environmental positive impact:

1- There is a growing need to verify that social innovation is an effective and sustainable way to meet social needs.

2- To justify the public or private resource allocation, as well as the attraction of resources to finance projects with social innovation that requires a shared understanding on what are the positive aspects about it.

3- Evidence-based policies require *ex ante* evidence of the expected impacts of the involved actions.

4- Social innovations can provide development of a new competitive advantage for economies, indicating that creating social value is central to the sustainability of societies.

5- To understand how social entrepreneurs realize the innovations generated by their activities can set up new lens that reveals the intention of every entrepreneur concerning the impact generated by social innovations, and this can serve as a guide for future entrepreneurs who wish to engage in some kind of activity, whether for profit or not, and to provide positive social impact through social innovations.

6- And, finally, to the academy, to deepen the understanding about social innovations can contribute to clarify the concept, for the reason that it is still in formation, as it can be observed in the course of this study.

We believe that the measurement of social innovation as a challenge is proportional to its scope. This difficulty can also be explained by the fact that its success is based on factors that, by its nature, are difficult to quantify. Additionally, its success can be based on how social innovations are able to act as drivers of social change, in how they can question established approaches and engage in a process of changing basic routines, behaviors, or beliefs about the social systems in which they occur.

With these reflections, we can notice that the increase of studies to deepen understand social entrepreneurship and social innovation has been noted in the literature, however, there is a gap in studies that measure social innovation as a result of social entrepreneurs. In other words, it is not observed in the literature studies covering the identification and classification of social innovation resulting from this type of organizations.

Social entrepreneurs have as premise the positive social impact and for this to occur, many of them apply innovations. These innovations, characterized as social innovations, may be of different types: incremental, institutional, or disruptive; they may have local, regional, national or global coverage, and they may be products, processes, organizational or marketing innovations. Thus, this study has the purpose to understand these social innovations, to identify and typify them by the development and application of a scale. Therefore, the objective of present study is to understand how social entrepreneurs realize the social innovations generated by their activities in terms of typology, depth and geographical coverage.

LITERATURE REVIEW

Social Entrepreneurship - Despite the growing academic interest in social entrepreneurship, this field still lacks a better conceptual understanding of the economic role and logic of the actions of social entrepreneurship (Santos, 2009). Some researchers typically define social entrepreneurs as entrepreneurs with a social mission and consider social entrepreneurship as entrepreneurial activities with social purposes (Dees, 2001). Therefore, the definition is derived from the integration of these two concepts: “entrepreneurship” and “social”.

Social entrepreneurship, commonly defined as entrepreneurial activity that incorporates a social purpose, has become an important economic phenomenon on a global scale (Mair & Marti, 2006). Some of the most impressive social enterprises are sourced from developing countries and involves the deployment of new business models that care about human needs (Seelos & Mair, 2005), as for example, the provision of low cost cataract surgery to cure visual impairment. However, the phenomenon of social entrepreneurship is also vibrant with developed countries. For example, according to a survey of the Global Entrepreneurship Monitor, 1.2 million people in the United Kingdom (which represents 3.2% of the population in working age) are social entrepreneurs (defined in the survey as people who are involved and perform a social role for less than 42 months). Since the comparable number for traditional entrepreneurship is 6.2%, these data raise the intriguing possibility that social entrepreneurship can be almost as important as the traditional one (Harding, 2006).

Another definition, although simplistic, offered by literature is that social entrepreneurship can be understood as organizations seeking business solutions to social problems (Thompson & Doherty, 2006). The authors offer a brief idea that social entrepreneurs focus on social results such as support and awareness for a positive and responsible behavior, and

empowerment and sustainable economic activities by the use of traditional entrepreneurs' principles.

Austin, Stevenson and Wei-Skillern (2006) made a comparative analysis between traditional and social entrepreneurship. The literature offers definitions of social entrepreneurship ranging from a simplistic perspective to a more magnified one. In the most simplistic definition pointed by the authors, social entrepreneurship typically refers to the phenomenon of applying business expertise and market-based skills in the nonprofit sector, as for example, when nonprofit organizations develop innovative approaches to acquire income. In a larger perspective, the authors point out that the central driver of social entrepreneurship is the question of the social problem involved, and a particular way an organization adopts must be a decision based on which format will more effectively mobilize necessary resources for the resolution of that problem. In this sense, the authors emphasize that social entrepreneurship should not be defined by a legal form of organization because they can be found as non-profit, as business with market logic or as government sectors.

Social entrepreneurship has become a construct that has been widely discussed since the beginning of the years 2000 (Tiskoski, Rosolen & Comini, 2013). It is observed that the academic work on the topic "social entrepreneurship" is growing, because the numbers of available articles in national and international databases point to this growth, according to a bibliometric study conducted by the authors. This increasing interest in social entrepreneurship is often evidenced by the success stories around the world in various fields (health, education, finance, culture, etc.); the concept became increasingly evident in commercial markets, academic discourse and policy-making (Nicholls, 2006).

In addition, to transform existing markets, social entrepreneurship has also been critical in the creation of new markets and market niches with initiatives such as fair trade and micro finance (Battilana & Dorado, 2010). The last field, micro finance, has regularly been cited as a flagship of social entrepreneurship, especially since the Nobel Peace Prize was awarded to the Grameen Bank and its founder, Mohammad Yunus.

Most of studied cases of social entrepreneurship, although making use of market logic to run their businesses, need to adapt to a new way of facing social problems in order to solve them, and make use of innovations to meet that goal.

Innovation - The studies of Schumpeter, in the first half of the 20th Century, stand out in this thematic for providing the conceptual bases that characterize innovation, and for this reason we discuss his contribution for a better understanding. Other authors who were Schumpeter's followers as Freeman (1987), Rieg and Alves Filho (2003) and Johannessen, Oslan and Lumpkin (2001), among others, also bring relevant contributions for clarifying the innovation concept. Once explored the concept of innovation, we sought to understand the various contributions that literature offers about social innovation that is the focus of this study.

The understanding of Schumpeter and his followers about innovation - The concepts of innovation and entrepreneurship are the most relevant contributions designed by Schumpeter to the economy. One of the most common themes in the texts of the author is the role of innovation (new combinations) and entrepreneurship in economic growth (Schumpeter, 1912). Despite the fact that the author be among the first to conceptualize innovation, the way to treat such matter has changed over time.

In his first understanding, Schumpeter (1912) highlighted in his book *Theory of Economic Development*, originally published in 1912, the function of entrepreneurs who were creating new combinations. The author noted the occurrence of discontinuous and revolutionary changes as the

essence of economic development that deconstructed economy from its static model and put it in a dynamic way. The author suggests that economic development occurs due to changes in economic life; and this process begins spontaneously, discontinuous and without charges, with their own initiative, and thus, creates prerequisites for new developments.

In the theory of economic development, it was conceptualized "development" as a historical process of structural change, substantially driven by innovation that was divided in five steps (Schumpeter, 1934):

- 1- New products launches or new formats of products already known;
- 2- New methods of production application or new methods of sales of a product;
- 3- Opening a new market;
- 4- Acquisition of new sources of supply of raw materials or semi-finished goods;
- 5- New organizational structure, such as the creation or destruction of a monopoly position.

It was argued that anyone who seeks profit should innovate. Innovation is considered an essential driver for competitiveness and economic dynamics. It is also believed that innovation is the center of economic change that causes waves of "creative destruction", which was a term coined by Schumpeter (1934) in the book *Capitalism, Socialism, and Democracy*. The process of innovation was divided into four dimensions: invention, innovation, diffusion and imitation. Then he placed the dynamic entrepreneur in the middle of his analysis. On his theory, the entrepreneurs' possibility and activity based on the findings of scientists and inventors create new opportunities for investment, growth and employment.

Among the authors that mirrored this vision of innovation, Freeman (1987) stands out in the literature. The author divided innovation into four categories: incremental, radical, technological system changes and changes in the techno-economic paradigm.

Incremental innovation is one that occurs continuously in any industry or service activity and can occur to a greater or lesser intensity. This kind of innovation can be the result of research and development, customer suggestion and also as a result of inventions and improvements suggested by professionals who work in that area and who are directly involved in production processes or execution of services. Therefore, this kind of innovation can be a creative solution that an employee has proposed as a way to meet a client or even a change of any input in the production of a good (Freeman, 1987).

Radical innovation refers to discontinuous events and is the result of deliberate research and development activities that can be undertaken in both organizations and universities. It includes, in this classification, changes in technological systems that have influence on the economy as a combination of incremental and radical innovation. The author adds, in his classification of innovations, the term "techno-economic paradigm", which is the one that affects the structure and the production and distribution conditions of practically all areas of the economy (Freeman, 1987).

Another characterization of innovation that stands out in the literature is based on innovations in processes and products commercially viable offered by Rieg & Alves Filho (2003). Additionally, the authors classify them as significant or incremental innovations. The significant innovations are those that relate to entirely new products and different from those that existed. Incremental innovations, according to the authors, refer to those that enhance existing products or processes that have improved from a certain innovation.

After checking the literature about innovation, in the next topic we discuss social innovation which is a type of innovation commonly addressed in the literature of social entrepreneurship.

Social Innovation - From the phenomenon of innovation that has been widely discussed in the literature, we can observe an offshoot of its understanding and applying that advances in the social scope: the social innovations. We can note a growing interest in social innovation among Governments, foundations, researchers, and academic institutions around the world. However, despite this interest, we do not note a shared or common concept about social innovation.

The lack of clarity on the term "social innovation" can be attributed not only to its analytical status, but also to its simplistic use as a "buzzword" in a multitude of used policies (Moulaert, MacCallum & Hiller, 2013). This lack of consensus between the experts in social innovation can also be explained by the contemporary subject, as verified in a study on meta-synthesis of social innovation conducted by Moraes-da-Silva, Takahashi and Segato (2016).

As a contemporary subject, it can be verified in the first publication about social innovation (Kanter, 1998) that it is a form of innovation that aims to reach not only new markets, but also ensure return to society. In the following years after the publication of this study, few articles were about the subject and just after the year 2008 it is possible to notice a considerable increase of publications (Phillips, Ghobadian, O'Reagan & James, 2015).

Types of social innovations - According to Oslo Manual (1997), there are four types of it:

1-Product innovation is the introduction of a new good or service or significantly improved in terms of their characteristics or uses. It includes significant improvements in technical specifications, components and materials, incorporated software, user friendliness or other functional characteristics;

2-Process Innovation is the implementation of a new method of production or distribution or significantly improved. It includes significant changes in techniques, equipment and/or software;

3-Marketing innovation is the implementation of a new marketing method with significant changes in the product design or in its packaging, in the product positioning, in its promotion or in its price fixing;

4-Organizational innovation is the implementation of a new organizational method in the company's business practices, in organizing its workplace or in its external relations.

Characteristics of social innovations – depth - Innovations involve changes, but not all forms of changes can be qualified as innovation. Only qualitative changes that deconstruct practices and common knowledge in a particular area can be called innovations. In this sense, innovations can also be classified according to its magnitude. Social innovations occur at multiple levels based on focus of expertise that can be of disruptive, incremental and institutional character (Nicholls & Murdock, 2012).

a) Disruptive social innovations - The theoretical contribution about disruptive social innovation describes it as a process by which a product or service that initially was historically accessible only for consumers with high purchasing power, becomes accessible to consumers of lower purchasing power (Christensen, 2012). The author points out some features for social disruptive innovations: at least in its initial stage, they feature smaller profit margins; smaller target markets; and simpler products or services that may not seem as attractive as the existing solutions when compared to traditional products or services.

b) Institutional social innovations - It is punctuated that social innovations that focus on the reconfiguration of existing economic and social structures, usually by the repositioning of new

technologies more directed towards social rather than economic, must be regarded as institutional social innovations (Nicholls & Murdock, 2012).

c) incremental social innovations - Incremental social innovations can be understood as the development of new ways of working partnerships with coordination and alignment of initiatives and which are directed to a common purpose and has as objective the mitigation of social problems (Bruin & Stangl, 2013).

The coverage of social innovations - The coverage of social innovations or its magnitude can be described in local, regional, national or global. Local innovations meet social and/or environmental problems of a particular community or town; regional social innovations serve a region or some regions (South, North, etc.) and may also reach some States; social innovations with national coverage meets all over the country; and global social innovations serve several countries (Comini, 2016).

METHODOLOGICAL PROCEDURES

As the main objective of this study is to develop a scale to verify how social entrepreneurs understand, before proceeding on the development of the scale we reviewed the literature to verify if there were studies that offer scales to map or measure social innovations. The following are the steps used in the conduction of this review.

The stages proposed by Petticrew and Roberts (2006) were followed. We used the Scopus platform to search. This base was chosen because it has support in several software tools besides allowing the observation of important data, as summary, dates, authors, institutions and countries. Additionally, we used the search tool Web of Science in order to verify if other studies could perhaps be found. However, after the search, using the same tool filters of the ones used in Scopus, no new study was found. As search filters, we used the following keywords and their derivations which were observed in the literature: Social Innovation Measurement (Nicholls, 2009), Social Impact Measurement (Nicholls, 2009), Measuring Social Impact (Bloom, 2012), Social Impact Scale (Bulut, Eren & Halac, 2013). Additionally, we have filtered articles found for social sciences, business and economics, and finally, by the ones in English, Spanish and Portuguese. As the studies on social innovation are practically new in the literature, we did not opt for a timeframe.

Developing the scale – Initial procedures - In order to develop the scale, we followed the procedures found in the literature for the development of items consisting in seven steps (DeVellis, 2012):

Step 1: What we wanted to measure in this study was the occurrence of social innovation in social entrepreneurships, identify their geographical coverage and classify their types.

Step 2: For the first list of items in the scale to be drawn up we have based on literature of innovation, social innovation, social entrepreneurship and creation of value. It was not considered, in the first list, the quality of the items; they should still be reassessed before their examination by experts and so, we developed 53 items based exclusively on the literature.

Step 3: The chosen scale type that most suits the goals of the research is a Likert type ordinal scale because it enables respondents indicate the degree of agreement regarding the items. We opted for a six-point scale (1=totally agree, and 6= strongly disagree).

Step 4: After the preparation of potential items to compose the final scale, they were submitted to experts' analysis. They should indicate whether the item had a high, moderate or low capacity to measure the construct of interest. Additionally, we asked the specialists to clarify, justify or even suggest changes to each item.

Step 5: In this step, it was decided, after a careful assessment, which items should be included in the scale.

Step 6: The items were evaluated concerning its individual performance so that they could compose the final scale.

Step 7: After evaluating the items selected, we should decide to maintain, increase or reduce the number of items in the final scale, taking into account the reliability of the scale.

Pre-test: After following the steps proposed by DeVellis (2012), we included the research instrument on the Survey Monkey platform and we asked to six social entrepreneurs to answer the questionnaire and inform, by e-mail, the considerations regarding the understanding of the variables and any other perceptions they could feel relevant in order to improve the instrument.

Sampling plan – The sampling plan was developed in five steps. The steps 1 to 4 refer to the content validation, and the step 5 refers to the psychometric validation.

1st step: 5 master and doctoral students who researched social innovation;

2nd step: 20 master and doctoral students who attended the course "Social Business and Entrepreneurship" at University of São Paulo.

3rd step: 7 PhD professors of Social innovation.

4th step: 6 social entrepreneurs (pre-test).

5th step: 264 social entrepreneurs

The sample universe of the 5th step was composed by 1195 social organizations. This mapping was done by researchers in the Brasil27 Project that aimed to strengthen the social business culture and support the existing ones. The project studied cases of social organizations or non-profit in the 27 States of Brazil. The objective of the project was to present a complete framework of the reality of social business. To obtain this sample, we conducted the study using an on line questionnaire and we asked the participation of the 1195 social organizations via e-mail. After following the first four steps in the sampling plan, from the 53 initially items developed, we got a 39-item scale to measure social innovation initiatives. The items in this scale were intended to assess core aspects of social innovation as felt by participants. We wrote items to assess types (process, product, institutional, marketing and organizational), depth (incremental and disruptive) and for geographical coverage of social innovations. We also wrote items to distinguish the type of organization (associations, foundations, cooperatives and enterprises); the sex of the founder, the consumers they serve; and the size of the organization using for it, the number of employees.

In order to validate the scale, after conducting the 5th step, we used SPSS V.22 to make the statistical analysis. The multivariate data analysis comprises a set of techniques that analyze multiple variables in a single relationship or a set of relationships simultaneously (Hair, Black, Babin & Anderson, 2011). To this end, after analyzing the lost values, extreme values, relative frequency, mean, standard deviation and coefficient of variation, we used multivariate analysis techniques: Exploratory factor analysis (EFA) and Confirmatory factor analysis (AFC).

RESULTS

After conducting the literature systematic review, the results indicated that some studies that sought to measure social innovation in social entrepreneurships did not do it with the purpose of identifying the type of innovation, depth and geographic coverage, as intended in this study.

Descriptive analysis - In this topic it is presented the profile of the researched organizations. According to the results, the majority of the organizations are associations. The types and percentiles of organizations are: associations (61.74%), foundations (7.20%), cooperatives (4.55%) and enterprises (26,52%). Regarding the sex of the founder, 59.09% are men and 40.91% are women. Most organizations serve the consumers of a city or community (43.18%), however there is a good representation of organizations with greater coverage: a state or a region (23.48%); a country (20.45%) and some countries (12.88%). Concerning the size of the organizations, mostly are micro organizations with 58.33% (up to 19 employees), followed by small organizations, with 35.23% (from 20 to 99 employees), medium-sized organizations with 6.06% (100 to 499 employees), and only 0.38% of organizations surveyed are considered large (over 500 employees). Regarding the age of the organizations, it is observed that most of them were founded in the last 30 years, although we found some organizations founded since the year of 1896. The majority of the organizations surveyed, around 40%, are headquartered in the State of São Paulo followed by Rio de Janeiro and Minas Gerais. It is also noticeable that there is at least one organization representing each federative State of Brazil.

The variables were measured on a numeric scale and for this reason they are liable of analysis by measures of central tendency and variability. This initial investigation is important because it provides specific and synthetic information of each variable in the study.

The median is a measure of central tendency, which enables the center of gravity of the data distribution of a variable. As measures of variability, we used the standard deviation and the coefficient of variation. The standard deviation is a measure that indicates the distance of the data around the middle, while the coefficient of variation offers a better interpretation to indicate whether the data are dispersed around the middle (Fávero, Belfiore, Silva & Chan, 2009).

It is evidenced that for most variables, the coefficient of variation (CV) was below 0.5, indicating low variability, and it indicates that the average is a good measure to synthesize the data of each variable.

Exploratory factor analysis (EFA) - The EFA, as an exploratory and interdependent technique, is commonly used to find an optimal structure of factors, considering each factor or construct consisting of a group of observable or manifested variables that are correlated with each other. However, with the use of set and confirmatory techniques, the EFA fulfills the purpose only of reduction and variable selection that meets the assumptions of the technique (Maroco, 2014). This objective is clarified by saying that the EFA could allow the study of interrelationships between a large number of variables in order to condense the information contained in each group (Fávero, Belfiore, Silva & Chan, 2009).

The reduction is based on the analysis of the correlation matrix, which seeks a combination of simplicity and power of explanation of the phenomenon through the grouping on dimensions and total variance respectively. To perform this process, it is assessed the assumptions that allow us to select the variables that best fit into a dimension. It is suggested the use of four assumptions: anti-image, commonality, factorial load and cross-load. If a variable does not meet the 4 assumptions, the variable is excluded from the analysis and will not be part of the next steps, the confirmatory techniques (Hair, Black, Babin & Anderson, 2011; Fávero, Belfiore, Silva & Chan, 2009). The anti-image is the same as partial correlations after the factor analysis and consists of a measure that explains the degree to which the factors explain each other. The measure is evaluated for each item and must be greater than 0.5. The commonality is the variance portion that a variable share with all the other variables included in the factor model; it is the most important factor for the selection of variables, since those variables that do not

reach the cutting point, taxed at 0.5, are summarily excluded from the analysis. When a variable does not reach 0.5 in commonality, it means that the portion of shared variance for the variable is less than random (Hair et al., 2011). The load factor is defined as the correlation between the variables that make up the dimension and the dimension itself. The factorial load must be at least 0.4. The cross-load uses the measure of factorials loads, consisting of incidence of high factorial loads in two or more dimensions. A variable must have high load factor in only one dimension.

The EFA was used in this research in sequenced steps, starting by the matrix of correlations among the variables tested. In the global analysis of the model it was used the index of Bartlett and the KMO (Keiser Meyer Olkin), to verify the presence of correlations between variables and adequacy of the sample complexity of the model respectively. The values found were satisfactory. In the Bartlett's test, the significance was below 0.05, resulting in 0.000, indicating that the correlations between the variables were not null. The KMO found was 0.902, indicating great balance between the number of variables and the size of the sample (Hair et al., 2011).

A factor analysis consists of sequenced steps. First we chose a method of extraction of the dimensions. It is commonly used principal component analysis-PCA. Another decision to make is in relation to the rotation of the dimensions. Orthogonal rotation, obeying a 90° angle in a plane in N dimensions offers better interpretability, and decreases the incidence of cross-load. In this method, the correlations between dimensions are arbitrated in zero. It is suggested by the literature (Maroco, 2014) to follow the steps of analysis with orthogonal rotation, and finally, check the factorial solution found by oblique variant, which admits the correlations between dimensions. If there is similarity between both analyses, it shows that the correlations between the factors do not interfere significantly in factorial model. After those decisions were taken, the calculations of the assumptions were made, and in each round of review, the assumptions were assessed according to their reference values and rules of decision.

After conducting the EFA, eight variables were excluded from the scale because they did not heed the assumptions.

Confirmatory factor analysis (CFA) - The first part of the analysis sought to validate a theoretical model. When we finished the EFA, as an exploratory step, a CFA was conducted in order to validate the empirical model. The first step consists in the verification of the assumptions of the CFA, with the purpose of decision of the use of multivariate technique. First, the model was tested and then we made the factorial, convergent and discriminant validation tests.

The conditions evaluated in the use of the CFA for covariances follow the recommendations expressed in the literature (Maroco, 2014; Hair et al., 2011). The conditions must be met to avoid measurement errors of type 1 and 2. The first and basic assumption to evaluate is the linearity of the model; the model must be linear to linear technique, as the CFA. When imported to AMOS (a statistical software package for structural equation modeling), the software confirms the linearity of the model calculating the parameters to be estimated.

Another related construct design of the model is the appointment of at least three clear variables for each construct; the literature indicates to delete the whole construct when it is formed by only 1 or 2 indicators (Maroco, 2014; Hair et al., 2011). The social construct, proposed by the variables 1 to 4 had to be excluded because it had the variables 3 and 4 deleted in EFA for violating one or more assumptions.

Another assumption that was answered still in designing the research tool is to use a scale with strong measure, i.e., a metric scale with 5 points or more.

One of the assumptions regards to the high correlation between the manifest variables. A way to avoid multicollinearity is performing the test VIF (Variance Inflation Factor). The test was performed in the previous step in the SPSS and confirmed the low influence of multicollinearity, even if it is present. The final assumption verified in AMOS after importing the data, is the detection of multivariate normality in the variables. This test is performed by the third- and fourth-order measures, which are respectively the asymmetry (sk) and kurtosis (ku). The results of sk and ku for the manifested variables were evaluated and no variable violated the reference values.

Thus, the conditions for the use of the CFA and all variables evaluated did not violate such assumptions. Then an analysis was conducted to generate estimates of parameters. As well as in EFA, the variables can be deleted through the results found in the CFA. The initial model is formed by 7 constructs and 29 variables. The model was designed in AMOS and it was used the method of maximum likelihood (ML), the same method used in the last step of the EFA. We evaluated the commonality and factorial charges to assign the reference values, which define for commonality = 0.5 or more and factorial load = 0.6 or higher (Maroco, 2014). The violation of the reference values are accepted, by decision of the investigator in search of parsimony. The indexes of modification were also evaluated to identify possible similarities between mistakes of the variables. A corrective measure is to include a correlation between the errors. In the first round, the indexes of quality of adjustment of the model were: $\chi^2 (356) = \chi^2 1106.440/df = 3.108$; CFI = 0.813; TLI = 0.787; NFI = 0.750, MECVI = 4.885 and RMSEA = 0.090 $pclose = 0.000$. The index χ^2/df is defined as the quotient of the Chi-square test on the degrees of freedom. It must be less than 5, indicating a good fit, even without any improvement of the factorial model (Maroco, 2014). The IFC, TLI and NFI indexes obtained were close to 0.8, indicating a good fit, as well as the RMSEA, stated between 0.05 and 0.1, indicating great fit. The MECVI obtained indicates that the model is complex.

Concerning the factorial charges, most of them was close or exceeded 0.7. The commonalities obtained were close to 0.5 or above. However, there are variables that were not close to the minimum load factor measures and commonality admitted, as is the case of the variable 27 that presented commonality of 0.17 and factorial load of 0.41. In relation to the contents of modification, it was arbitrarily set a limit of 30, being an index that also does not present in literature reference values. The defined limit depends on the complexity of the model, seeking to balance simplicity and completeness. We found high rates of change between the mistakes of the variables 24 and 27, with IM of 44, this being the largest IM found between the errors of the variables. Another IM above 30 was found in the variables 10 and 17, with IM = 36. It was decided in a first moment, to correlate the errors of variables with high IM and exclude the variable 27.

After these modifications, the model showed a remarkable improvement, with the increase of the factorial loads and commonalities of the variables, in addition to the improvement of quality indices of adjustment: $\chi^2 (328) = \chi^2 904.401/df = 2.757$; CFI = 0.850; TLI = 0.827; NFI = 0.786, MECVI = 4.105 RMSEA = 0.082 and $pclose = 0.000$. Although the model has improved, the variable 11 of Disruptive Depth construct presented low commonality = 0.33. Thus, the variable was removed from the model for new test.

After deleting the variable, the model showed more improvement, but weaker than the previous one. The measures of global adjustment in this round were: $\chi^2 (302) = \chi^2 822.975/df = 2.725$; CFI = 0.859; TLI = 0.837; NFI = 0.797, MECVI = 3.776 RMSEA = 0.081 and $pclose = 0.000$. Observing the factorial loads, we still verified variables that did not reach the minimum

reference value for this parameter. In the Organizational Type construct, the variable 38 presents factorial load of 0.57 and commonality of 0.32, being then excluded from the analysis.

The model was tested again in search of the best global adjustment and we still found a slight improvement, but with global indices values very close to those found earlier. However, in the Process Type construct the variable 24 presented low commonality = 0.22. As this construct features only 3 variables, we decided to exclude the whole construct, for violating the assumption of having 3 variables in each construct. After doing it, the model was tested again and it was verified that there was significant improvement in global adjustment. With 6 constructs, the model showed lower complexity, as seen in the improvement in the MECVI index. The other global indices also showed appropriate measures: $\chi^2(214) = \chi^2 611.387/df = 2.857$; CFI = 0.870; TLI = 0.846; NFI = 0.815, MECVI = 2.843 RMSEA = 0.084 and pclose = 0.000.

After all the rounds narrated, the factorial model presented variables that approach or pass of the minimum values of commonality and factorial load required. Thus, the final factorial model consists of 23 variables, excluding the variables 11, 38, 23, 24, 27 and 25. The variables 1 and 2 were deleted even before the process of analysis of the CFA, for violating the assumption of having at least three variables for construct.

The Standard Error (SE) is the estimated error; it reflects the accuracy with which each parameter was estimated. Very high or very small SE reflects a poor model because they hamper the determination of the parameters. The factorial model generated presents SEs low, indicating a high level of accuracy estimation. CR is critical ratio, consisting of the ratio between the estimated parameters for the mistakes. This test follows the normal distribution: a 99% confidence level two-tail. The p-value of CR was close to zero, and consequently it reject the null hypothesis, showing that the estimates were different from zero.

With the final model obtained, the next step was the validation of the theoretical model. It is suggested first to check the factorial validity, given the discharge factor minimum required load (Maroco, 2014; Hair et al., 2011). The variable 15 is the only variable that does not meet the minimum of 0.6, obtaining 0.583. However, variables with values close to the minimum are accepted, if the model gets good fit even with such variable.

Other types of validity are the convergent and discriminant ones. Convergent validity is obtained reaching minimum values of reliability composed (RC) and extracted variance average (EVA). For the convergent validity, the RC must be greater than 0.7 and the EVA greater than 0.5. The convergent and discriminant validity results are presented in Table 1.

Table 1
Convergent and discriminant validity results of the CFA

	EVA	DP	IP	IT	Prod	Org	MT	CR
Disruptive depth (DP)	0,50	0,5						0,833
Incremental Depth (IP)	0,55	0,41	0,55					0,758
Institutional Type (IT)	0,50	0,43	0,36	0,50				0,785
Product Type (Prod)	0,62	0,28	0,35	0,46	0,62			0,833
Organizational Type (Org)	0,52	0,19	0,05	0,40	0,26	0,52		0,810
Marketing Type (MT)	0,61	0,06	0,43	0,23	0,46	0,19	0,61	0,862

Is it evidenced that the convergent validity is met, once the EVA for each construct is greater than or equal to 0.5, and the CR is greater than 0.7 in all constructs. Discriminant validity under the criterion of the literature (Fornell & Larker, 1981) is also satisfied, since each EVA is larger than the correlations between squared constructs. In this way, the model has been validated showing its consistency and repeatability. The Table 2 presents the 23 variables that compound the final scale.

Table 2

Validated scale variables

Incremental social innovation variables
1-Our products/services already existed, but we have improved them and reduced costs so that people who are in situations of social vulnerability could have access to them.
2-We developed new products/services that are cheaper than the ones that already existed and that meet socially vulnerable populations.
3-We improved products and/or services that already existed to reduce the environmental impact and/or to meet people in situation of social vulnerability.
Disruptive social innovation variables
4-Our new products/services enable social and/or politic participation to people who are in situations of social vulnerability.
5-Our new products/services transform the lives of people in situations of vulnerability.
6-Our new products/services meet a challenge creating equality, social justice and empowerment.
7-Our products/services are new alternatives offered to individuals and organizations as a means to achieve social change to their communities.
8-Our new products/services have changed the market structure to meet people in situation of social vulnerability.
Institutional social innovation variables
9-Our new products/services promote changes in social relations by increasing the level of participation of socially vulnerable groups.
10-We perform updates in products/services that lead to inclusion of historically excluded groups.
11-Our new products/services focus on the reconfiguration of existing social and economic structures with new technologies more targeted to minorities who are in situations of social vulnerability.
12-Our new products/services rewrite and create new markets to serve people who are in situations of social vulnerability.
Product social innovation variables
13-Our products/services have innovative functional features that suit the demands and/or consumer profile in situation of social vulnerability.
14-Our products/services have changes that do not alter their function or intended use, but best suit consumer demands in situation of social vulnerability.
15-Our products/services have changes in their characteristics that are perceived as valuable by consumers, especially those in situations of social vulnerability.
Marketing social innovation variables
16-We use marketing to generate a new conception of the product and/or service in order to facilitate the use by people in situation of social vulnerability, and/or cause less environmental impact.
17-We use a new method of promotion or sales on pricing, in order to enable consumption by people in situation of social vulnerability, and/or cause less environmental impact.
18-Our products/services have a new design that fit the profile of the consumer in situation of social vulnerability and/or that the environmental impact is minimal.
19-We intend to increase the sales volume through changes in the positioning of our products/services in order to make them accessible to consumers in situation of social vulnerability.
Organizational social innovation variables
20-Our Organization reaches its social and/or environmental objectives utilizing new methods of partnerships with other organizations to learn new ways of working.
21-We seek to acquire knowledge and interact with other organizations to achieve our social and/or environmental objectives.
22-Our organization employs new methods of interaction with other companies to share knowledge and achieve social and/or environmental objectives.
23-Our products/services are part of new initiatives and partnerships which aims to reduce social and environmental problems.

CONCLUSION

After developing and validating the scale, we conducted some analysis to identify the types and depths of social innovations found among the respondents as well as some other demographic characteristics. It is important to highlight that the main purpose of this study was to not take an “x-ray” of social innovations generated by social entrepreneurs, but to develop a validated scale. Nevertheless, we made these analyses to understand the social innovations generated by these entrepreneurs who made part of the validating procedures.

The geographical representation of the organizations present in the sample indicates that the majority, around 40%, is headquartered in the State of São Paulo followed by Rio de Janeiro and Minas Gerais. It is also remarkable that there is at least one organization representing each federative State of Brazil.

Among the depths of social innovations recorded, the most outstanding was the disruptive in all kinds of organizations surveyed. Among the types of organizations surveyed, cooperatives showed the highest percentage of disruptive innovation.

Regarding the type of social innovation, process innovation could not be assessed in the sample. This finding is considered relevant because in the study of Comini (2016) it also did not show relevance. As it is the perception of the entrepreneurs, and as the main objective of the entrepreneurships is to cause social impact, product, marketing and organizational innovations are more likely to be perceived when compared with process innovations. Product social innovation is very similar in the perception of respondents of all types of organizations. Marketing social innovation showed the highest incidence in the cooperatives; however it had the weaker perception on foundations and associations. The social organizational innovations stood out more intensively in the cooperatives, while in other organizational types they were similar.

Micro, small and medium-sized organizations had higher incidence of disruptive social innovations, although they perceived also social incremental and institutional innovations. Large organizations did not emphasize the perception of incremental, institutional or disruptive social innovations; however, regarding to the kind of social innovation, the only one that stood out was the social organizational innovation.

Regarding the size of the organizations, analyzing the scope of care, associations, in its majority (55.8%) fulfill especially a certain location (community or town). However, a considerable part (21.5%) also fulfills one or a few regions; and is also present in the country (13.5%) and in several countries (9.2%).

The foundations followed the same initial logic of associations, fulfilling first a community or city (47.4%), followed by one or a few regions (26.3%). However, they reverse the incidence as they have greater prominence in several countries (15.8%) than in a single country (10.5%).

Cooperatives did not followed the same initial logic of associations and foundations, because they stand out more in one or more regions (41.7%) followed by a city or community (25%). With regard to a country or other countries, these are equated with 16.7% for each of these scopes.

In the case of enterprises, the initial logic is not followed again, as they meet more a country (40%), followed by one or a few regions (24.3%); several countries (20%) and lastly a community or city (15.7%).

Associations and foundations serve primarily social objectives, 76.1% and 63.2%, respectively; and secondly the environmental objectives, 22.7% and 36.8% respectively. A minority (1.2% of associations) meets environmental objectives only.

Cooperatives stood out equally among the meeting social (50%) and social environmental objectives (50%). Enterprises also were considered equivalent as to the social objectives (44.3%) and social environmental (45.7%) objectives; however 10% of enterprises indicated the objective to meet the environmental problems only.

With regard to the sex of the founder, we found it balanced with 54.6% of the males and 45.4% female. The foundations were mostly founded by men (73.7%). Cooperatives and enterprises also have a predominance of the male founders, 66.7% and 64.3% respectively.

For future research, we recommend applying this scale in a larger number of organizations and also in other countries. We also recommend checking the existence of process social innovations, since this instrument could not do it.

Finally, the findings of this research do not intended to exhaust the subject, but instigate new research to better contribute to the knowledge of such relevant subject.

This study also aimed to contribute to deepening the understanding of social enterprises and the social innovations they are generating to achieve their goals, and highlight the emergence

of studies about this "ecosystem" to understand who these "actors" are and how they are revolutionizing the way of doing business in Brazil.

As limitations, within the complexity of the various types of social entrepreneurs, we point out the difficulty of their location and their low representation in some Brazilian States.

We hope that this study will inspire new researchers to explore this theme in order to enhance the understanding of the social entrepreneurs and the social innovations that they develop to achieve their goals, whether they are social, environmental or both.

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