ABSTRACT

The economy is always a social construction, which cannot be separated from society itself (Polanyi 2011, Laville, 2014). The Solidarity Economy prioritizes local development and human through practices of cooperation and self-management. The present debate about Solidarity Economy has emphasized the urge for strategies to strengthen enterprises via formation of networks of cooperation, due to the difficulty of access to the market, finding that can be identified also in the international context (Spear, 2004, Borzaga, 2005, Young, 2007, Grassl, 2012). The aim of the study was to investigate, using a quantitative multivariate approach, if the organization in networks of cooperation fortifies those enterprises. For such, the national database from the survey performed in Brazil during the period 2010 to 2013 was analysed, comprising a sample with 9,897 enterprises. The results corroborated with the referred literature, foregrounding that the strategy of forming networks, indeed differs positively enterprises.

KEY WORDS: Solidarity economy, cooperation networks, public policies, Brazil.


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Agrupaciones de la Economía Solidaria: la estrategia de la participación en redes de cooperación en Brasil

RESUMEN: La economía es siempre una construcción social y no puede separarse de la sociedad (Polanyi 2011, Laville, 2014). La Economía Solidaria prioriza el desarrollo local y humano a través de las prácticas de cooperación y autogestión. El debate actual sobre la Economía Solidaria hace hincapié en la necesidad de estrategias para fortalecer las empresas mediante la formación de redes de cooperación, debido a la dificultad de acceso al mercado, lo que se pueden identificar también en el contexto internacional (Spear, 2000, 2004, Borzaga 2005 Young, 2007 Grassl, 2012). El objetivo del estudio fue investigar, mediante un enfoque cuantitativo multivariado, si la organización en redes de cooperación fortalece las empresas. Para ello, se analizó la base de datos nacional de la encuesta realizada en Brasil durante el período 2010 a 2013, que comprende una muestra de 9.897 empresas. Los resultados corroboraron con la literatura de referencia, lo que demuestra que la formación de redes, de hecho difiere positivamente esas emprendimientos.

PALABRAS CLAVE: Economía Solidaria, redes de cooperación, política pública, Brasil.
1. Introduction

On a historical and theoretical perspective, the Solidarity Economy (SE) is not a marginal phenomenon, as it is a result of a contemporary reaction to the inability of the State and market failures. Even countries with high developed welfare present the tradition of associative and cooperative movements as well as other forms of economy (Borzaga and Tortia, 2007, Defourny and Nyssens, 2010). Thus, Solidarity Economy has started to be comprehended as an innovative form of governance that contemplates social interaction, self-management and sustainability, using bottom-up strategies of development (França Filho & Laville, 2004, Azambuja, 2009, Laville, 2014).

According to Howaldt and Schwarz (2010) as well as Bignetti (2011), the environment of Solidarity Economy enterprises (SEE’s) is one of the most dynamic and favourable to new solutions and social innovation, because of the participation and cooperation among the actors involved. It is understood that this form of economy reveals a rupture with the model of hegemonic development of the market (or the State). Although solidarity economy acts in an endogenous way, it develops alternative processes to hegemonic policies of development, which overlap in society, giving prevalence, thus, to a welfare system comprising society as a whole (Borzaga & Tortia, 2007, Satgar, 2007, 2014, Singer, 2008, Petropoulos, 2013).

The current debate about SE emphasizes the need for strategies to fortify SEE’s, once the access to the market and the commercialization of their products is seen as the great difficulty among them, followed by insufficient technical and managerial support (Brazil, 2007). In fact, this observation can be identified in both Brazilian and international contexts (Spear, 2000, 2004, Borzaga, 2005, Young, 2007, Grassl, 2012).

In an imperfect market of asymmetrical competition, there are reasons to believe that SEE’s will only be prosper if they are articulated as a network, forming integrated productive chains. The arrangements between SEE’s, together with public policies of assistance and management, are responsible for strengthening SEE’s (Brazil, 2007). As reported by Mance (2000, 2001, 2002, 2006), the improvement of Solidarity Economy is a consequence, among other reasons, of greater awareness about the importance of the organization in networks for the socioproductive inclusion and further success of those enterprises.

Other theorists connected to the SEE’s such as Mance (2001), Gaiger (2004), Borzaga and Tortia (2007), Singer (2008) and França Filho (2013) assert about the importance of the articulation in networks. For these authors, networks are capable of potentializing and complementing individual actions, granting the necessary robustness to face the inhospitable environment of SEE’s as well as the realization of other “economy” as an alternative to the capitalistic hegemonic model.
This research is centred in the analysis of those cooperative networks in the Solidarity Economy. An initial proposition is that the adoption of the strategy of assembling cooperative networks is a necessary step towards strengthening SEE’s (Gaiger, 2004, Metello, 2007, Gomes, Pessoa & Faria, 2008, França Filho & Cunha, 2009; Pereira & Faria, 2009, Azambuja, 2009, França Filho, 2013).

As previously mentioned, the studies about Solidarity Economy in the past years have been focusing on the benefits of organizing SEE’s in networks of cooperation to make them sustainable, nevertheless, there are no quantitative studies identifying evidences if the organization in networks would actually differ these enterprises regarding their performance. Therefore, this study brings forward the following research question: does the strategy of organizing in networks of cooperation differ clusters of SEE’s?

Hence, the general objective of this study is to investigate if the strategy of participating in networks of cooperation differentiates the performance of solidarity economy enterprises, either strengthening or improving their performance as well as enhancing their socioproductive inclusion in the market. The specific objectives outlined to achieve the general one are (i) to identify clusters of SEEs considering their characteristics; (ii) to outline their most distinctive characteristics; and (iii) to analyse the profile of SEE’s participating in networks of cooperation relating them to the ones not taking part in networks, checking also if the formation of networks differs the clusters of enterprises.

To achieve the objectives proposed above, we considered empirical data from the database mapped during the period from 2010 to 2013 by the National System of Information on Solidarity Economy (SIES, in Portuguese) from the National Secretary of Solidarity Economy (SENAES, in Portuguese, a unit related to Ministry of Labour and Employment (MTE, in Portuguese), which provided a sample of 9,987 solidarity economy enterprises. The data was analysed via multivariate statistics of Cluster Analysis, using the software SPSS (Statistic Package for Social Science).

Gaiger (2007) has already pointed out to the high predominance of qualitative studies in the social and solidarity economy field, and, indeed, quantitative studies in the area are scarce. The importance of applying a cluster analysis lies in the inexistence of statistical studies that identify similar groups in the solidarity economy field and their respective clustering profiles. This statistical analysis will also permit to evaluate if the strategy of participating in networks of cooperation differs SEE’s, an issue referred in the literature and the objective of this study. The verification of the influence of participating in networks is an important matter for strategic investment decisions and to orient related public policies (Mance, 2000, Gaiger, 2004, Gomes, 2007, Pessoa & Faria, 2008, Ferreira & Faria, 2009, Azambuja, 2009, França Filho, 2013).
2.1. Academic and empirical overview of Solidarity Economy

According to Laville (2014), the economy is always a social and plural construction, corroborating with Polanyi (2011) who considers to be mistaken to separate it from society. The “human economy” approach (Hart, Laville & Cattanni, 2010) highlights not only the local and human development, but also the need for an economic view that fulfills the gap between daily practices and a wider context of human development. In this sense, Bauhardt (2014) suggests the solidarity economy is based on projects and initiatives resulting in alternative ways of living, producing and consuming.

Furtado (2000) understands development as a social plan enabling the transformation of society as a whole, thus, the economic development must consider collective values. A great challenge, for this author, would be to convert income concentration, suggesting that economic growth is not enough condition to overcome distortions and give dynamism to endogenous development, a specific model for regions.

Borzaga and Tortia (2007) confirm this reflection; these scholars contemplate a concept of development that does not focus only on the growth of aggregated variables, such as production and labour, but also on demands from other actors. These authors ponder that the economic theory has dedicated little attention to social enterprises, directing its efforts to the achievement of profits and rents for investors.

The draft of what became the Solidarity Economy movement, or Social Economy in some countries, appeared in the context of resistance to a system of increasing social exclusion, poverty and structural unemployment, resulting from the emphasis on capital accumulation and profit maximization. In fact, the creation of solidarity enterprises in Brazil, according to the SENAES, emanates as an alternative to unemployment or a complementary source of income (Singer, 2005a, 2005b, Brazil, 2007, 2008, Coraggio, 2014). Commonly depicted as similar, the difference that can be established between social economy and solidarity economy emerges from the experiences of distinct countries; inasmuch Solidarity Economy is associated with the creation of networks and initiatives for generating collective, sustainable and solidarity forms for the production, trade and consumption within communities (Satgar, 2014).

The approach of solidarity economy is based on the conviction that the economy must serve human beings, not the opposite. In this perspective, labour is not treated as a commodity, to be traded in the market. The social aspect and the economic autodetermination are stressed, implying in smaller pressure for natural resources, different of traditional capitalistic forms of production. Despite this wider objective, solidarity economy is not sundered from the market, being established with it (Barhardt, 2014).
According to Gibson-Graham (2006), in the solidarity economy, besides the demand for the autodetermination of actors, the emancipatory and democratic reorganization are praised. This author emphasizes that the solidarity economy approach rejects traditional economic standards and postulates a systemic change, which is the core of post-capitalistic politics.

The solidarity economy theoretical background is inspired in ideas identified in the work of Polayni (2011): market, redistribution, reciprocity and economic administration. According to Bauhardt (2014), due to practical orientation of the solidarity economy, the existing academic studies concentrate in the analysis of experiences. This author sustains that there is not a unique and broad theoretical concept for solidarity economy, not a definition, or even a clear unifying term. The following table 1 schematizes the main theoretical approaches on SE.

**Table 1. Theoretical overview of social and solidarity economy**

<table>
<thead>
<tr>
<th>Authors</th>
<th>Theoretical overview of social and solidarity economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Razeto (1997)</td>
<td>Solidarity Economy as a constant and widespread process of insertion of solidarity practices within the present economic structure, resulting in a new rationality. The author does not interpret solidarity as a mechanism separated from the Economy.</td>
</tr>
<tr>
<td>Gaiger (2004, 2011), Franca Filho (2002, 2007, 2013), Singer (2005, 2008), Sousa Santos (2002)</td>
<td>Solidarity economy as a form of production wherein the means are collective possession of those who work with them. The solidarity economy enterprises are managed democratically by workers. It is a different social form of production, which is not summarized in the economic function itself, but in the search for social welfare.</td>
</tr>
<tr>
<td>Mance (2000, 2001, 2002, 2006)</td>
<td>This author emphasizes collaborative networks within Solidarity Economy, proposing a system wherein interdependent and intertwined networks of SEE’s would enable a new economic rationality underpinned on principles of cooperation and solidarity distinct of the market. The idea of network comes from the principle that productive units operating insulated tend to fail.</td>
</tr>
<tr>
<td>Defourny and Nyssens (2010)</td>
<td>They conceive the Solidarity Economy as inserted within the Third Sector, which comprises not only not-for-profit organizations, but also cooperatives and mutualistic organizations.</td>
</tr>
<tr>
<td>Laville (2009, 2014)</td>
<td>Social Economy refers to specific ways productive organizations follow principles such as: free adhesion, internal democracy and limited profitability. This approach is commonly used in countries like Portugal, Spain and France.</td>
</tr>
<tr>
<td>Coraggio (2014)</td>
<td>This author considers, at first, a Popular Economy, and, later, an Economy of Labour, as an economic sector and not a field of study. The focus is on the satisfaction of primary needs of the population. It does not regard profits as its initial or final proposal.</td>
</tr>
<tr>
<td>Holzmann (2000), Quijano (2002), Barbosa (2007)</td>
<td>They develop a critical rationale related to Solidarity Economy, questioning the success of SEE’s and their capacity of social, political and economic transformation.</td>
</tr>
<tr>
<td>Arruda (2003)</td>
<td>This author suggests a subordination of economic interests to social ones, in order to forge a social economy. He also stresses the role of education as an emancipatory mechanism for Solidarity Economy actors.</td>
</tr>
</tbody>
</table>

SOURCE: The authors.
Laville, Levesque and Mendell (2007) reflect that new theoretical approaches for solidarity economy are the result of a fertile interchange between scientific associations and international networks of investigation such as CRICES in Canada, CRIDA and LISA in France, COPAC in South Africa, EMES in Europe and the international center CIRIEC.

In the academic sphere of Applied Social Sciences, the Solidarity Economy is still far from the mainstream. The interest around the topic is still reduced; nevertheless, it has been growing gradually. A bibliographical search in portals such as the Scientific Periodicals Electronic Library (SPELL) or Scielo bring forward, together, about 100 articles, few coming from Applied Social Sciences. Regarding the strategy of research on Solidarity Economy, it is verified the qualitative predominance. For Gaiger (2007), the broad mapping on national level made by SENAES about SEE’s in Brazil enabled a change in scale in academic studies, as the objective data allowed quantitative studies in the field as well as the verification of trends.

In Brazil, the first discussions about the topic appeared amidst unemployment and social exclusion crisis in the 1990s, although early experiences actually emerged during the 1980s (França Filho, 2002, Singer, 2005a). From the empirical point of view, the Solidarity Economy is an international movement and reflects an economic reality that encompasses a variety of initiatives. In this regard, table 2 exhibits a brief overview of SE in some countries.

According to SENAES (2007), the Solidarity Economy potentialities comprise the development of productive sustainable systems, the promotion of conscious and responsible consumption, emancipation and the increase in value for the worker as well as the reduction of income disparities. Moreover, SE would make possible the collective property of shared gains, solidarity financial systems, acknowledgement of women’s role in society and improvements for populations in extreme poverty.

Despite presenting considerable potential, the SE faces great challenges in its process of institutionalization. For example, SEE’s limited capacity of production with low aggregated value of their services and goods, lack of linkages between steps of production as well as uncertainty and risks. Furthermore, there are other problems to be addressed such as economic dependence, an extensive network of subcontracts, limited and pulverized public policies (Brazil, 2007), aim of the next section.
Table 2. Empirical overview of social and solidarity economy

<table>
<thead>
<tr>
<th>Country</th>
<th>Empirical overview of social and solidarity economy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Brazil</td>
<td>There are 19,709 SEE’s, which 17,776 are operational and 794 are under implementation. Besides that, there are productive networks such as the Justa Trama Network (Textile Chain), Abelha Network (bee farming), Banco Palmas (microcredit) and others.</td>
</tr>
<tr>
<td>Mexico</td>
<td>Creation of the “Mexico fair Market” with the objective to strengthen fair trade at national level.</td>
</tr>
<tr>
<td>Colombia</td>
<td>It was created, in 1991, at national level, the National Association of Recyclers, comprising 88 big cooperatives, which represent 10% of the population who lives from collecting waste.</td>
</tr>
<tr>
<td>Peru</td>
<td>More than 3,000 popular restaurants are supplied by the popular commerce. The bottom line is to promote the growth of national commerce through the reduction of intermediates. Producers, mostly indigenous people and farmers, can receive a fairer price for their goods.</td>
</tr>
<tr>
<td>Canada</td>
<td>Formation of the CRIDES network for fostering and supporting social and solidarity economy.</td>
</tr>
<tr>
<td>The USA</td>
<td>Formation of the RIPESS network for fostering and supporting social and solidarity economy.</td>
</tr>
<tr>
<td>England</td>
<td>Around 62,000 social enterprises contribute to the economy with 24 billion euros, employing more than 800,000 people.</td>
</tr>
<tr>
<td>France</td>
<td>Formation of the CRIDA and LISE networks for fostering and supporting social and solidarity economy.</td>
</tr>
<tr>
<td>Spain</td>
<td>International Center of Research and Information on the Public, Social and Cooperative Economy – CIRIEC.</td>
</tr>
<tr>
<td>India</td>
<td>About 30 million people organized in 2.2 million of self-managed groups.</td>
</tr>
<tr>
<td>Germany</td>
<td>Operation of more than 70,000 initiatives of mutual assistance in sectors such as healthcare.</td>
</tr>
</tbody>
</table>


2.2. Public policies related to Solidarity Economy

According to Borzaga and Tortia (2007), public policies have the power to create a favourable environment to solidarity and social economy, enabling to show their potential for reconciling economy and society. The SE movement, regarding national and international contexts, has influenced the establishment of public policies to assist local development (França Filho et al., 2006, Laville, Levesque & Mendell, 2007).

The recent United Nations Development Programme report for Development pointed Brazil as the country that most reduced income inequality in Latin America and Caribbean, especially at the base of the social pyramid, however, the country still maintains a high Gini index of 0.498, above 0.4, which also indicates a high concentration of income, this difference increases when measured between regions, states and municipalities (PNUD, 2014). According to Piketty (2014), this measure does not express the real level of economic inequality, since the Gini index will not express the accumulation of wealth, which in a country like Brazil, would lead to an even higher level of inequality. In this context, the public policies as a goal: empower local development to reduce inequality.
Public policies materialize investment strategies of resources, once they direct objectives, actions and decision-making processes in the public management sphere. It is in this context that public policies to foment SE are inserted, to be defined as an array of initiatives from civil society that seek economic goals and aim at the dissemination of values like democracy, equity and social inclusion and decrease inequality (França Filho & Laville, 2004, 2006, Singer, 2008).

In fact, in the international scenario, many countries have legislated in the social and solidarity economy fields with the purpose to create new legal forms to subsidize local initiatives (Borzaga & Santuari, 2001, Haugh & Peredo, 2010, Defourny & Nyssens, 2010, Satgar, 2014). Brazilian public policies on ES emphasize territorial and network-oriented approaches to achieve greater integration through chains of production and trade (Mance, 2006, Brazil, 2014).

Those public policies allow SEE’s to be more competitive and survive in the market. The scope of this study does not encompass in detail the related programs given its academic purpose. Nonetheless, it stresses the socio-political and socioeconomic advances in solidarity economy during the past years, inasmuch they were included in the governmental strategic agenda.

Laville, Levesque and Mendell (2007) assert that recent research on SE renews the original associative perspective, aiming to align the myriad of initiatives in the field. This approach defines ESSs in terms of their bidimensionality, once they are socioeconomic and socio-political at the same time, as illustrated in the picture below. These authors bring forward the socio-political dimension as the most relevant aspect of SE as a form of emancipation and participation within civil society, nevertheless, due to market failures, it is not rare the search for State collaboration, thus, emerging the socioeconomic dimension to be materialized through public policies.

**Picture 1. The two dimension of Solidarity Economy**

SOURCE: Adapted from Laville, Levesque and Mendell (2007).

To Laville, Levesque and Mendell (2007) the relationships between SEE’s and the State are critical, because they have impact on two political issues: firstly, the centralization of potential actions on SE actors as a whole; secondly, the centralization of power activism. The interaction between governmental initiatives and civil society result in mutual effects. On the one hand, SEE’s actors partici-
Public policies taken on to favour SE, although still modest, are social and institutional innovations that create appropriate conditions to their development. They are result of the negotiation process between actors from social and solidarity economy with their respective governments. In Brazil, the creation of SENAES is a good example as well as debates and forums for discussion, which represent a new institutional context and the co-production of public policies (Singer, 2003, 2008).

SENAES' policies foresee, with the formation of solidarity networks, the generation of adequate competitive conditions for solidarity economy enterprises. The aforementioned would provide appropriate insertion of SEE's in market spaces, gains of scale, permanent offer of goods and services, technological interchange to improve quality and productivity as well as the optimization of production and management costs. These policies also aim to articulate common demands for SEE’s such as managerial and technical assistance, strategies and mechanisms to access markets, logistic structures for the productive capacity and compliance with legal aspects (Brazil, 2007).

According to Singer (2003), with the establishment of SE, cooperative networks widen their power of governance on results of different steps in productive processes. It is essential to be maintained, however, the diversity of productive systems. These systems fortify the horizontal relationship of the unit whereas they strengthen vertical relationships with different moments of productive chains (Brazil, 2007).

It was realized during the years that public policies regarding SE in Brazil have been evolving for the strengthening of technical assistance and education of SE actors. In addition, as praised by Arruda (2003), the instruction of those actors is essential for SE emancipation. Moreover, there is a strong tendency to clustering and to both horizontal and vertical structuration of productive chains, which is the topic to be addressed in the section (Mance, 2001, 2006, Singer, 2005a, 2005b, Brazil, 2011, 2014).

2.3. Cooperative networks of Solidarity Economy

Based on the mapping performed by SENAES, the first big difficulty ESSs face is the access to the market and to the commercialization of their products, followed by insufficient technical and managerial assistance (Brazil, 2007). The ESSs, like any other productive organization, confront functional challenges on their routines. The difficulty of access is related directly to market failures that cause imbalances between supply and demand as well as allocative inefficiency, typical of the emergence of cooperative movements (Borzaga & Spear, 2004).

The strategy of forming Solidarity Economy Networks (SEN’s) comes from the need for ensuring sustainability to those endeavours. Public and individual efforts may create some of those networks,
but all SENs are, in principle, cooperative. These networks stress production in chains, whether horizontal or vertical, where there are productive, commercial and consumption-related functions. Organizing in networks may favour the access to markets for small producers in many alternative spaces (Brazil, 2007, Mance, 2008).

As suggested by Laville, Levesque and Mendell (2007), the institutional context, the dynamism of social movements and their capacity to forge favourable alliances are decisive factors that influence the relative size and dynamism of both social and solidarity economies in any given society.

The strategic decision of assembling SEN’s rises from acknowledging that isolated SEE’s are normally small and with little infrastructure, holding also little economic sustainability. In this sense, the role of the State in the promotion of those demands is substantial as, possessing a global vision, it is capable of giving direction to the development of public policies, avoiding pulverized actions and seeking the necessary impact to strengthen SE (Mance, 2001, 2002, 2006, Brazil, 2007).

Balestrin and Verschoore (2008) bring forward the organization in networks supposes the existence of shared interests and objectives, unified efforts and capabilities, partial or total collective property of goods, apportionment of results and responsibilities in the face of difficulties. In fact, these arrangements share both risks and power. According to those authors, the benefits of organizing networks are increased power within the market, dispersion of risks and limited opportunism, collective learning, reduction of costs, asset complementarity, innovation and technological development.

Mance (2002) emphasizes the role of SEN’s as an organizational format for ESS’s, once the idea these networks function as a mechanism for strengthening alternative practices in the economy is accepted, such as the reaction towards unemployment and exclusion. This author highlights the possibility to build an alternative society to the capitalistic, using resources that were produced within it as well as through the promotion of solidary consumption.

The public policy operationalized by SENAES establishes, as objectives for an intervention, the sectorial organization of ESS’s, in other words, a joint action of clusters of enterprises from the same productive sector. The aim would be to foster interaction among them, to fortify cooperative networks and the organization of productive chains (Brazil, 2007).

To França Filho (2007), a SEN is an articulation of several initiatives of the Solidarity Economy movement targeting the constitution of a circuit of economic relationships and the interchange of experiences and knowledge, through productive, democratic and solidary underpinnings. These new arrangements form, according to Laville (2009), a plural economy, which admits different relationships among actors, going beyond the regular formal conception of economy oriented to gains. Singer (2005a, 2005b) states that the articulation of those SENs in a given territory must avoid the emergence of the traditional accumulation rationale, once general cooperation is the goal of this kind of alternative production.
Gaiger (2004, 2011) reflects that ESSs and SENs are still subordinated to big companies, which compose the core of productive chains. The way those solidarity enterprises engage with traditional companies and the their position within productive chains, the lack of professional qualification as well as material and technological resources, and the inadequacy of solidary rationale to the market contribute for those businesses to be located in peripheral positions. In addition, many relevant decisions are taken from the outside, such as technical and managerial ones about the conception and production of new goods, constraining the role of SEE’s and SEN’s for delivering services or providing inputs, to be processed by big companies. This author criticizes the system that propitiates comparative advantages and assists the maintenance of inequities between organizational models.

In this sense, Mance (2000) contemplates a vision wherein networks of solidary collaboration should develop in a closed configuration in order to constitute, in the long run, an antagonistic version of the capitalistic market. The implementation of networks would accumulate resources and would gear a new post-capitalistic culture, originated from the adequate insertion of SEE’s in market spaces and the implementation of favourable conditions for competition.

The SENAES (Brazil, 2007) supports the articulation of common demands to SEE’s via technical and managerial assistance, strategies and mechanisms of access to the market, logistic structures to achieve gains of scale and compliance with legal standards. These actions would widen governance power on results from diverse steps of the productive process, observing traditional elements to commerce that potentialize SEE’s. The scale of production, quality, legal aspects and constant offer are important matters to achieve sustainability for SEN’s.

The participating actors in SEN’s nurture the interest in the success of their competitors. If a SEE grows, there are possibilities for others to grow. Failure is undesired once the bond is solidary. Novick and Gallart (1997) describe four possible ways of bonding through networks: with high managerial standards, by chains or subcontractual relationships, financial relationships and territorial enclaves. Mance (2001) categorize SEN’s as shown in Figure 2:

**Figure 2. Types of network configurations**

![Figure 2](image)

SOURCE: Adapted from Mance (2000).
Moreover, Mance (2001) conveys four kinds of solidarity economy networks. Configuration A represents the inexistence of a network, where all points are scattered; in configuration B, there is a network wherein the flow of information is centralized; in the third setting, the network is decentralized and different groups articulate to produce goods and services, thus, forming an array of decentralized networks. Configuration D would exhibit a distributed network, once the information is spread through the entire network at all moments; hence, this is the best form of connexion. In fact, it is the most complex kind inasmuch all points unite simultaneously.

Therefore, the articulation in networks contemplates several groups of consumers, with members buying goods only from the network itself. This effort originates revenues, allowing the creation of other cooperatives and social enterprises with the aim to promote and build up solidary production and consumption.

3.- Research methodology

The research methodology conducting this work considered the following dimensions: the nature of the objective; the nature of the research; the method for data collection; the approach to the problem; the analysis of results; as well as the population and the sample investigated.

This research might be characterized as exploratory, regarding the nature of the objective (Cooper & Schindler, 2003). Considering the approach to the problem, it presents a quantitative character related to its data collection and further analysis (Collis & Hussey, 2005). The intention is to grant accuracy to the results, to reduce possible distortions that might occur in the analysis and the interpretation of data as well as to widen a safe margin for inferences. In this sense, the scope of the data organization aims to make explicit if the participation in networks of cooperation differs clusters of SEE’s.

The data collection was accomplished through access to the database provided by the System of Information from the Solidarity Economy (SIES, in Portuguese), a mapping that was made through a national survey realized from 2010 to 2013 by SENAES. The referred database was made available by SENAES via formal suit using an official form and signature of the terms of use related to this database.

According to Hair et al. (1997), it is rare when the scholar has an entire population to do a study. Usually, a sample is obtained and, then, groups are formed. An important assumption is the sample accuracy, wherein atypical observations must be previously analysed to avoid introducing bias in the estimation of the data clustering structure, including outliers, discrepant data to the majority of the sample. Therefore, as the authors conclude, all efforts must be done to ensure accuracy, so results can be generalizable to the population of interest.
In this regard, from the total sample of 19,709 SEE’s, ongoing functional enterprises were selected, comprising 17,776 of the total sample. From this point, the sample construction and validation was accomplished through those steps: firstly, the selected SEE’s presented all data, related to the variables identified as relevant to this study, fulfilled. In a second moment, it was performed an exploratory analysis using the SPSS to identify possible outliers with the outlier labelling rule technique, which allowed to obtain 9,897 suitable SEE’s for the model to be applied with quality.

From this initial filtering process, the SEE’s data were analysed utilizing a multivariate technique, with the purpose to allow a deepened scrutiny of the results obtained, for such, the cluster analysis (CA) technique was carried out. Cluster analysis is a technique used to classify objects or cases in relatively homogenous groups. The objects in each cluster tend to be similar to each other, but discrepant when compared to other clusters (Malhotra, 2001). According to Malhotra (2001), the use of cluster analysis must follow well-established rules, from the definition of the clustering problem to the evaluation of validity of the clustering process.

The analytical instrument for data analysis will be the Two Step Clusters technique. According to Hair et al. (1997), this instrument privileges situations in which is necessary to deal with objects of complex configuration, both conceptually and methodologically. This method is recommended particularly for segments of big databases where one can find variables with different measurement levels, which can be continuous or categorical, as in the case of the database in this study. Another benefit of the instrument is the definition, by the method’s algorithm, of the ideal number of clusters for the model.

Therefore, these were the methodological steps to ensure if the participation in networks of solidarity cooperation differs solidarity economy enterprises among each other, as it will be explained in the next section.

4.- Data analysis

According to Hair et al. (1997), Cluster Analysis (CA) groups objects according to their similarities, thus, the CA was applied to verify, among the 9,897 solidarity economy enterprises from the sample, which ones were similar to one another, considering the variable participation in networks, common characteristics of each group, and the distance level between them.

As reported by Malhorta (2001), it is necessary to indicate the measurement distance and the clustering process used in the method, in this turn; as informed in the previous section, these procedures
were performed by Euclidian distance and Two Step Cluster. This process is recommended for big databases, with metrical and non-metrical variables, and diversity in measurement.

Following the steps for CA employment proposed by Malhorta (2001), the variables to be statistically treated were selected, based on the mapping carried out by SENAES from 2010 to 2013. The variables were expenditure, turnover, investment, credit and number of partners, region, participation in networks of commercialization and the engagement in networks of production, the last three were the non-metrical variables utilized in this study. An initial statistical significance test at 5% level identified that the turnover and expenditure variables were not significant and when they were included in the model, caused distortion on the results, for this reason these variables were excluded from the Two Step Cluster procedure.

The number of clusters was not retained at first due to the size of the database, then, the automatic identification through the CA Two Step Cluster was chosen, which compares the values of a selection criterion using solutions from different clusters. The Two Step Cluster method makes available two criteria of clustering used for the automatic determination of the number of clusters to segment big databases: the “Bayesian Information Criterion” (BIC) and the “Akaike Information Criterion” (AIC). In this study, the chosen one was the Bayesian, easily identified in the Two Step Cluster output.

Firstly, the algorithm calculated the BIC criteria for each number of clusters, intending to find the initial estimated number, which were fifteen in our study. Next, the initial number of clusters was refined. If analysed only by the BIC value, the criterion would be to select a number of clusters with smaller BIC value, nevertheless, the SPSS algorithm uses a combination of the value of the BIC change rate, the “Ratio of BIC changes” and the distance of maximum likelihood, the “Ratio of distance means”. Thus, the number of clusters presenting higher values for both rates is selected, which were two in this study. The assumption is that the formation of networks of solidary cooperation fortifies SEE’s and differs them in relation to other enterprises not participating in networks, in agreement with the typology provided by Mance (2000).

Table 3. Number of clusters formed with 100% of the sample

<table>
<thead>
<tr>
<th>Cluster number</th>
<th>Number of SEE’s in the cluster (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>7,704 (77.8%)</td>
</tr>
<tr>
<td>2</td>
<td>2,193 (22.2%)</td>
</tr>
<tr>
<td>Total</td>
<td>9,897 (100%)</td>
</tr>
</tbody>
</table>

SOURCE: Elaborated by the authors using the data statistically treated in the SPSS output of the Two Step Cluster method.
In this initial analysis, it was identified that the algorithm included the entire sample, in other words, no SEE’s was excluded from the cluster analysis. It was perceived that the Two Step Cluster, as an exploratory tool, reveals profiles that apparently do not exist in big databases. The algorithm employed in this procedure, thus, has desirable characteristics that differ it from traditional techniques. For categorical variables, the percentage graph within groups shows that each categorical variable is divided within the aggregated groups.

The clusters resulting from this analysis were analysed according to the variables used to build them. To improve visualization of the clusters formed from the 9,897 observations and its respective characteristics, the table 4 was elaborated, with descriptive statistics for each cluster, compiled from the CA output.

The first cluster is composed by 7,704 SEE’s with the following characteristics: SEE’s located mostly in the north and northeast, but also with a significant share from the southwest of Brazil. Those can also be characterized as recent SEE’s, once the average time of existence is 11.64 years; nevertheless, when compared with the group 2, there is no significant difference about this variable, what is also highlighted on Table 4, regarding the significance of variables. The variable SEE’s time of existence is in the last position of importance in the predictor. This cluster presents a low mean regarding the quantity of partners, if compared to group 2, with only 39.7 partners per enterprise. No SEE’s from this group participate in networks of solidarity cooperation, whether it be production or commercialization, and it is perceived based on table 3, that the average levels of investment and credit are the lowest as well as when compared to data from group 2, an important difference is verified. This cluster might be characterized, according to the typology suggested by Mance (2000) as an unexisting network, inasmuch SEE’s are disperse. The results convey that a great share of SEE’s do not link to others through networks, leading to smaller credit raising and investments. Due to the high importance of network-related variables, the participation in networks is evidences as an interfering factor on enterprise performance, as it was theoretically referred.

The second cluster is formed by the smallest group in the sample, with 2,193 SEE’s. Those SEE’s have the following features: they are mostly established in the north, south and especially the northeast of Brazil. Those enterprises started their activities in 12.04 years, in average; however, as previously mentioned, this cluster does not present great distinction from group 1. This cluster also shows an average quantity of partners considerably higher when compared to the first group, with 103.97 partners per enterprise. SEE’s in this group participate in networks of solidarity cooperation, regarding both commercialization and production, although their participation is emphasized on the ones related to production. Based on the figures from table 3, it is possible to infer that those enterprises are the ones that invest the most, once they present the highest average in investment from both clusters, besides that, these enterprises obtain most credit. The participation in networks of cooperation is relevant in the analysis, inasmuch the enterprises with such action represent the most successful ones. The results demonstrate that few enterprises are organized in networks, thus not taking advantage of the benefits this kind of organization provide. The statistical results confirm what was stated in the theory, once the participation in networks indeed strengthens the aforementioned enterprises.
### Table 4. Information about the clusters formed

<table>
<thead>
<tr>
<th>Characteristics for cluster formation</th>
<th>Grup 1 (Do not participate in networks)</th>
<th>Grup 2 (Participate in networks)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of SEE’s in each cluster (%)</td>
<td>7,704 (77.8%)</td>
<td>2,193 (22.2%)</td>
</tr>
<tr>
<td>Region (number of SEE’s)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>N: 1,608</td>
<td>N: 488</td>
<td></td>
</tr>
<tr>
<td>NE: 3,040</td>
<td>NE: 647</td>
<td></td>
</tr>
<tr>
<td>S: 1,124</td>
<td>S: 495</td>
<td></td>
</tr>
<tr>
<td>SE: 1,088</td>
<td>SE: 361</td>
<td></td>
</tr>
<tr>
<td>MW: 844</td>
<td>MW: 202</td>
<td></td>
</tr>
<tr>
<td>SEE’s time of existence (average in years)</td>
<td>11.64</td>
<td>12.04</td>
</tr>
<tr>
<td>Number of partners in the SEE (mean)</td>
<td>39.7</td>
<td>103.97</td>
</tr>
<tr>
<td>Investment (mean)</td>
<td>7,339.52</td>
<td>107,060.49</td>
</tr>
<tr>
<td>Credit (mean)</td>
<td>7,155.56</td>
<td>461,564.92</td>
</tr>
<tr>
<td>Participation in networks</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes: 0</td>
<td>Yes: 2,140</td>
<td></td>
</tr>
<tr>
<td>No: 7,704</td>
<td>No: 53</td>
<td></td>
</tr>
<tr>
<td>Participation in networks of commercialization</td>
<td>Yes: 0</td>
<td>Yes: 700</td>
</tr>
<tr>
<td>No: 7,704</td>
<td>No: 1,493</td>
<td></td>
</tr>
<tr>
<td>Participation in networks of production</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Yes: 0</td>
<td>Yes: 1,218</td>
<td></td>
</tr>
<tr>
<td>No: 7,704</td>
<td>No: 975</td>
<td></td>
</tr>
<tr>
<td>Agriculture, livestock farming, forest production, fishery and aquiculture</td>
<td>3,246</td>
<td>737</td>
</tr>
<tr>
<td>Water, sewage, activities of waste and decontamination management</td>
<td>145</td>
<td>43</td>
</tr>
<tr>
<td>Housing and catering</td>
<td>48</td>
<td>13</td>
</tr>
<tr>
<td>Arts, culture, sports and recreation</td>
<td>26</td>
<td>8</td>
</tr>
<tr>
<td>Administrative activities and complementary services</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Financial activities, insurance and related services</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Real estate activities</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Professional, technical and scientific activities</td>
<td>1</td>
<td>2</td>
</tr>
<tr>
<td>Commerce, repair of vehicles and motorcycles</td>
<td>612</td>
<td>244</td>
</tr>
<tr>
<td>Construction</td>
<td>3</td>
<td>1</td>
</tr>
<tr>
<td>Education</td>
<td>13</td>
<td>0</td>
</tr>
<tr>
<td>Electricity and gas</td>
<td>1</td>
<td>0</td>
</tr>
<tr>
<td>Transformation industry</td>
<td>3,542</td>
<td>1,123</td>
</tr>
<tr>
<td>Extractive industries</td>
<td>7</td>
<td>5</td>
</tr>
<tr>
<td>Information and communication</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Other service activities</td>
<td>38</td>
<td>12</td>
</tr>
<tr>
<td>Human health and social services</td>
<td>2</td>
<td>0</td>
</tr>
<tr>
<td>Transportation, storage and mail services</td>
<td>13</td>
<td>1</td>
</tr>
</tbody>
</table>

**SEE area of performance**

**Observation:** The algorithm did not exclude cases from the database.

**SOURCE:** Elaborated by the authors based on data statistically treated in the output of the Two Step Cluster method.
The analysis also asserts the importance of two areas in the Solidarity Economy field: the first one is the transformation industry and the second is connected with agriculture, livestock farming, forest production, fishery and aquaculture. The transformation industry occupies the most representative share in the two groups formed. According to the Brazilian Institute of Geography and Statistics (IBGE, in Portuguese), based on data published in 2014, the transformation industry encompasses the physical, chemical and biological transformation of materials, substances and components aiming to obtain new products. In general, those activities are developed in industrial plants and factories; however, the IBGE also considers as industrial activity manual and artisanal production happening at households, being sold directly to customers, common feature in solidarity economy. Goods generated in this industry might be ready for consumption or not, in this last scenario they would be used as raw materials in another place in the transformation industry. The highlighted appearance of the transformation industry in both clusters points out to the urge of guiding public policies towards assisting and managing those enterprises. The issue of associating in networks must also be taken as a priority, as it was statistically highlighted, it represents a factor of greater influence on the performance of solidarity economy enterprises.

The northeast concentrates most SEE’s in both clusters. In fact, regional differences throughout the years explain this concentration of solidarity economy enterprises. The structural social inequality affecting this region is a motivator for the emergence of social mechanisms seeking regional and endogenous development (Furtado, 2000; FrançaFilho, 2007). The endogenous development is mainly underpinned on resources locally available, intending the construction of local economies and the retention of benefits in the area (Hart et al., 2010; Utting, 2013). The higher northeast participation demonstrates the need for specific public policies, especially regarding assisting and managing those enterprises, as stressed in the previous paragraph. The strategy of forming networks of cooperation is also an essential matter to build a suitable environment for SEE’s.

The Two Step Cluster allowed verifying the cluster analysis quality graphically in the end of the output. In this study, the CA presented high quality in both clusters formed. Once this step was finalized, an important observation was related to profiles of SEE’s clusters: the formation of networks of solidarity cooperation, whether it be related to commercialization or production, actually fortifies those enterprises, as suggested in the literature. This characteristic also differs SEEs’ performance, confirming the statistical significance of this particular strategy, at a level of significance of 5%. The strategy in networks of cooperation, thus, must be considered as a priority for outlining public policies in the solidarity economy context (Mance, 2000; Gaiger, 2004; Azambuja, 2009; Laville, 2010; França Filho, 2013).

Afterwards, the tests of significance for the variables in each cluster were performed in order to validate the clustering process, as suggested by Malhorta (2001). The significance of variables within each cluster was presented graphically in the output as the Importance predictor. This information is provided through the measurement of statistical significance (Chi-square for categorical variables and T-test for continuous variables). In the graphs, the axis x exhibits the Chi-square value and the axis y
shows the list of variables. The bars on the right of the critical value indicate variables important to differ the clusters. As informed in table 5, after region, the most important variables for this study are, as predicted, the ones related to the participation of SEE’s in networks of commercialization and production.

Table 5. Information on the importance of each variable

<table>
<thead>
<tr>
<th>Variable</th>
<th>Measurement of predictor importance*</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in networks (red26)</td>
<td>1.00</td>
</tr>
<tr>
<td>Participation in networks of commercialization (red27a)</td>
<td>1.00</td>
</tr>
<tr>
<td>Participation in networks of production (red27b)</td>
<td>1.00</td>
</tr>
<tr>
<td>Number of partners (soc17total)</td>
<td>0.10</td>
</tr>
<tr>
<td>Region (reg)</td>
<td>0.08</td>
</tr>
<tr>
<td>Credit (cre136Atual)</td>
<td>0.02</td>
</tr>
<tr>
<td>Investment (inv131Atual)</td>
<td>0.01</td>
</tr>
<tr>
<td>SEE time of existence (ano12Atual)</td>
<td>0.01</td>
</tr>
</tbody>
</table>

*Chi-square test of the variable

SOURCE: Elaborated by the authors based on data statistically treated in the Two Step Cluster method output.

The variables related to the participation in networks were the most significant ones, corroborating with the theory analysed and with this work initial assumption (Gaiger, 2004, Mance, 2005, França Filho & Cunha, 2009). The number of partners was also shown as a significant variable, confirming the study carried out by Gaiger (2007), which had identified that as the number of partners grow, the better SEE’s perform. The importance of the variable region can be explained by local differences, as pointed out in the literature, regarding structural weaknesses, levels of public policies being applied and different levels of technical and managerial assistance (Mance, 2006, Gaiger, 2007, Singer, 2008).

Finally, the data about SEE clusters can be considered as profiled; according to the levels of association in networks of solidary cooperation as well as to the tests of significance providing validity and credibility to the analysis performed. Therefore, we can affirm with statistical confidence that, at a level of significance of 5%, this is the profile of SEE’s existing in Brazil.
5. Concluding remarks

The strategy of creating networks in the solidarity economy, whether in Brazil or another country, emanates from the urge of enterprises, mostly cooperatives and associations to adapt to changes, in accordance with the form and nature of the welfare state in their respective countries (Laville et al., 2007).

This study sought to identify profiles of solidarity economy enterprises and their networks of cooperation, aiming to contribute with the present literature on Solidarity Economy, using as theoretical support the work of Mance (2000). To accomplish this objective, the database provided by SENAES, a result from a mapping comprising the period ranging from 2010 to 2013, was statistically analysed through the multivariate quantitative method of cluster analysis. In this sense, the objective was to investigate if the formation of networks indeed allows strengthening SEE’s and their socio productive inclusion.

Considering the first specific objective, the cluster analysis performed brought as result the formation of two clusters. Based on the sample characteristics, the groups composed are homogeneous within themselves and heterogeneous between each other. Cluster 1 does not participate in any kind of network and performs more poorly when compared to the other cluster. The identified differentiation between clusters corroborates with previous studies performed by Mance (2000, 2001, 2002, 2006).

Regarding the second specific objective, the statistical analysis permitted to point out the characteristics that differ groups of SEE’s the most, considering the participation or not in networks of commercialization, followed by the presence in networks of production. In fact, the observation confirmed the theory in which the formation of networks is an important factor for the success of solidarity economy enterprises. The variables investment capacity and credit raising were also identified as important, different of the variables turnover and expenditure, which did not express significance in the tests, thus, being excluded from the analysis to avoid distortions on the results.

The third specific objective intended to obtain the SEE’s profiles relating them to the participation or not in networks of solidary cooperation. It was verified that the participation in networks indeed influences enterprise performance positively, as the literature suggests (Mance, 2000, Gaiger, 2004, Azambuja, 2009, Laville, 2010, França Filho, 2013).

Nevertheless, this study is not without limitations. They reside in the need to deepen the analysis on SEE’s that take part in networks of cooperation to identify the different typologies proposed by Mance (2000, 2001, 2002, 2006), once the statistical analysis of the database does not allow this sort of iden-
tification. Therefore, as a proposal for future research, it is suggested a qualitative and quantitative analysis of SEE s that engage in networks using a specific instrument for data collection, encompassing all networks of cooperation put forward by Mance, who foresees different types, each one with its own performance level.

This study has contributed with the research on the Solidarity Economy field by confirming the theory that the strategy of creating networks, as a form of social innovation for socio productive inclusion, has a positive influence on SEE s. It is hoped this work has also contributed with the comprehension of solidarity economy as a reality in countries like Brazil, thus, it is fundamental to foster strategies that adapt them to the market dynamics, without losing their solidary, cooperative and associative features.

6.- References


