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The Life Cycle of Small-firm Networks: An Evaluation of Brazilian Business Networks

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Abstract

Interorganizational agreements and cooperative business networks became an important strategy for companies facing competitive disadvantages. Specially small and medium firms adopted collaborative network models as a way to overcome common problems. Over 1,000 small-firm networks (SFNs) are estimated to have been created in Brazil since the year 2000. This study aimed to propose a SFNs life cycle model, applying it to a sample of twenty-eight SFNs established in two regions of southern Brazil. The results revealed that 68% of the analyzed SFNs are declining or no longer in business. Among the active business networks, 21% remain at the development stage, and only 11% have achieved consolidation. Most SFNs analyzed fell into a stage of decline early on in the life cycle, incapable of reaching Consolidation. Although results are restricted to the analyzed sample, our study highlights that major managerial efforts are necessary to reach the consolidation stage due to network complexity and expectations of network members. We conclude the paper by presenting subsidies for public policy makers and strategies that SFNs may adopt to reach the status of consolidated networks.

Key words: small-firm networks (SFNs); cooperation; life cycle; interorganizational relations.

Introduction

The new reality the Brazilian market has faced since the 1990s has brought competitive challenges to domestic companies (Coutinho & Ferraz, 1994). Interorganizational agreements and cooperative business networks became a necessary strategy for companies facing a competitive disadvantage (Lazzarini, 2007, 2008). While large companies relied on such strategies as partnerships and alliances (Balbinot & Marques, 2009), small and medium firms adopted collaborative agreements such as small-firm networks as a way to overcome common problems (Andrade & Hoffmann, 2010; Castro, Bulgacov, & Hoffmann, 2011; Magalhães, Daudt, & Phonlor, 2009). Small-Firm Networks (SFNs) are long-term collaborative agreements through which firms establish joint strategies, structures and a form of relationship governance to achieve common goals and generate competitive advantages (Dean, Holmes, & Smith, 1997; Jarillo, 1993; Kilduff & Tsai, 2003; Provan & Kenis, 2007). Firms with complementary and supplementary resources cooperate to reach common goals, for instance, in clothing industries (Balestrin, Vargas, & Fayard, 2008) or building supply stores (Wegner & Antonello, 2012).

Although recent in Brazil, the strategy to form SFNs is widely consolidated in other countries. In Germany, SFNs based on collaborative agreements have existed for over a century, and 200,000 firms allied in over 320 business networks represent an annual turnover of 350 billion Euros (Veltmann, 2009). In Spain, 350 business networks have combined 46,000 small- and medium-sized firms, which represent 7% of the country's GDP (Asociación Nacional de Centrales de Compra y Servicios [Ancoco], n.d.). Northeast Italy is also a recurring example of cooperation amongst small firms due to the competitiveness that firms inserted in business clusters have reached (Casarotto & Pires, 1998; Fiol, Tena, & García, 2011).

Between 800 and 1,000 SFNs have been created in Brazil in just over a decade (Secretaria do Desenvolvimento e Assuntos Internacionais [Sedai], n.d.; Serviço Brasileiro de Apoio às Micro e Pequenas Empresas [Sebrae], 2012). This number reveals that many firms rely on cooperation as a strategy to improve business competitiveness. However, a more in-depth analysis shows the difficulties many SFNs face to remain in the market. Over a four-year interval, approximately one-quarter of the SFNs mapped by the Brazilian Support Service to Micro and Small Businesses (Sebrae) are no longer in existence or became inactive, revealing a high failure rate (Sebrae, 2008, 2012). Similarly, Toigo and Alba (2010) revealed that many SFNs started in southern Brazil had difficulties in consolidation. Bortolaso, Verschoore and Antunes (2012) assessed the development level of cooperative strategies in twelve SFNs and concluded that they are at a low stage of development.

Despite Ebers and Grandori's (1997) call for further studies of the dynamic evolution of interorganizational networks more than a decade ago, Jap and Anderson (2007), Jiang, Li and Gao (2008) and Cropper and Palmer (2008) argue that more emphasis still needs to be placed on this issue, especially regarding small-firm networks. Therefore, the current study aims to propose a life cycle model of SFNs and to identify the respective dimensions to analyze the development stage such business networks find themselves in, and then apply it to a sample of twenty-eight SFNs established in two regions of southern Brazil.

The proposal of a SFN life cycle model is justified by a number of reasons. Life cycle models found in literature are mainly focused on strategic alliances (Jiang, Li, & Gao, 2008; Spekman, Forbes, Isabella, & Macavoy, 1998), client and supplier relationships (Zineldin, 2002) and partnerships (Dwyer, Schurr, & Oh, 1987). Such interorganizational agreements differ from SFNs in number of partners, governance and management. Moreover, existing models do not clearly represent which dimensions or characteristics of the cooperative agreement should be analyzed to understand its dynamics and development stages. Our life cycle model contributes to overcome such theoretical gaps by taking into account SFNs characteristics and broadens the understanding of their changes over time. Network managers can also rely on the model to acknowledge SFNs development stages and accelerate consolidation.

The article is organized as follows: the first part reviews theoretical models that propose different models of network life cycles. The second part describes the research methodology, while the third part presents the proposed life-cycle model and analysis of the small-firm networks. The article ends by presenting conclusions, limitations and suggestions for future studies.

Business Networks: Characteristics and Dynamics of Development

One difficulty in understanding the cooperation between multiple organizations is that interorganizational relationships assume diverse forms (Grandori & Soda, 1995). When the business relationship involves agreements between more than one dyad of organizations, the concept of a network can be applied. SFNs is a type of cooperation among firms that agree to work in collaboration due to common goals in order to further stimulate knowledge and technology exchange (Dean, Holmes, & Smith, 1997; Human & Provan, 1997) while maintaining legal autonomy. It is a cooperation model involving small firms facing competitive difficulties in terms of resource limitations. Unlike other cooperative models that may be established for a defined period of time and close after reaching their goals (*e.g.* strategic alliances), SFNs are created without a time limit. Firms can obtain benefits via cooperation, such as scale, access to services, risk sharing (Verschoore & Balestrin, 2008b), status and legitimacy (Podolny & Page, 1998), learning (Balestrin *et al.*, 2008; Knight, 2002) and the development of innovations (Hoffmann, Bandeira-de-Mello, & Molina-Morales, 2011).

Although efforts have been made to understand the motivations and benefits of interorganizational cooperation, gaps related to the management and governance as well as the understanding of the dynamics and the development stages of interorganizational networks (IONs) persist (Jap & Anderson, 2007). One of the challenges to understand the dynamics of cooperation is the variety of formats of interorganizational relations (Grandori & Soda, 1995; Todeva, 2006). In addition, most studies that have thus far proposed life-cycle models for IONs have based their analysis on strategic alliances or partnerships with significant differences in the structuring and management with respect to SFNs.

Several organizational and network life-cycle models follow the pattern of a biological life cycle (Adizes, 1999; Ahlström-Söderling, 2003; D'Aunno & Zuckerman, 1987; Dwyer *et al.*, 1987). The idea of association amongst SFNs' dynamics and a biological life-cycle model is supported by a self-organizational character (autopoiesis) (Varela, Maturana, & Uribe, 1974) creating an open system (the network) through an ongoing flow of transformations to the members' level (the firms) and the evolution and permanent adjustment to a common ground level (Bertalanffy, 1975; Prigogine, 1996). This way, at formation the business network is composed as a new organization liable to external factors, as well as to its own internal development, which could also be interpreted as an evolutionary dynamic compared to a biological life cycle adapted to the business world (Wood, 2000) and more recently to the networks (Bjorn *et al.*, 2013).

The model developed by Dwyer, Schurr and Oh (1987) highlights that most studies analyze IONs as discrete events and not as long-term relationships that are developed. To fill this gap, the authors propose a life-cycle model with five stages. The **Awareness** stage refers to the recognition of possible partnerships, followed by the **Exploration** stage. During this stage, any potential partner considers all duties and analyzes the benefits of cooperation. The **Expansion** stage is characterized by increasing interdependency. In the **Commitment** stage, the partners have reached a high level of satisfaction, and a great number of resources are committed to the partnership. Finally, many paths lead to **Dissolution**, but one of the partners generally becomes unsatisfied with another and believes the ongoing costs are higher than the benefits.

The life cycle model proposed by D'Aunno and Zuckerman (1987) was created focusing on federations "which consist of groups of three or more organizations that join resources to achieve

common goals. A distinct characteristic of federations is that the activities are coordinated and, to a certain extent, led by an organization or a management group” (p. 534). The first stage is characterized by the **Emergence of a coalition**, in which the organizations identify goals and agree upon a set of purposes. The **Transition to a federation** occurs in the second stage when a management group coordinates and directs efforts. This transition can be difficult due to the reluctance of some members to pass authority to executive committees. The third stage is **Maturity**. In this stage, federations can generate significant benefits to members. Once maturity has been reached, several **Critical crossroads** can occur as members begin to depend more on the federation to obtain relevant resources.

Ring and Van de Ven (1994) see the development and evolution of an ION as a repetitive sequence of negotiation, commitment and execution stages, each being evaluated in terms of the efficiency and equity. At the **Negotiation** stage, partners develop common expectations about their motivations, investments and uncertainties that are noticed regarding the project, which will then be executed together. In the **Commitment** stage, partners try to reach an agreement on the rules and future joint ventures. Finally, commitments and rules are put into action at the **Execution** stage.

Spekman, Forbes, Isabella and Macavoy (1998) argue that little is known about the management requirements at the varied stages of a life cycle experienced by alliances. The authors proposed a seven-stage model, the first of which is called **Anticipation**: it is the preliminary stage where firms foresee possibilities and ideas for a strategic alliance. This stage may be the beginning of converting expectation into real action. **Engagement** is defined as mutual expectations amongst partners in relation to the alliance. **Valuation** is the period during which the alliance terms are negotiated and established. The partners introduce competences and resources to the alliance and compare the respective relevance of such assets. **Coordination** is the stage where the alliance formally begins to operate and management structures emerge. The **Investment** stage refers to the needs of the partners to invest in the commitment of assets and resources towards actions in the alliance. **Stabilization** indicates the stage during which the alliance is a viable entity in operation. The last stage is **Decision**, in which the alliance course of action is defined by reevaluating the results already achieved.

The life cycle developed by Zineldin (2002) makes an analogy of a personal relationship, characterized as a dynamic process that demands action, interaction, trust, adjustments and commitments. In the **Discovery** stage, organizations identify needs and predispositions to enter an interorganizational relationship. If this process is satisfactory, the alliance proceeds to the **Development** stage, where the main rules for the relationship are established. When it reaches the **Commitment** stage, members are already likely involved to the point that they feel encouraged to continue investing in the relationship. In the **Loyalty** stage, an ION is marked by partners' commitment, flexibility, adjustment and a great competence to aggregate value.

The model designed by Ahlström-Söderling (2003) is the only one that takes the SFN as the start-up point to analyze its development process, successful achievements and failures. The proposed model consists of three stages: formative, normative and integrative. In the **Formative** stage, the system emerges from the union of complementary elements establishing links. In the **Normative** stage, the system develops an organizational structure that offers support to the goals established in the previous stage. The leadership style may change to lean towards relationships and be task oriented. Lastly, in the **Integrative** stage, the cooperation and its environment are mutually dependent on each other and need to cooperate to improve their performance. In this stage members attempt to transform the SFN and initiate a new cycle. If this process fails, the SFN tends to slowly decline.

Jiang *et al.*'s (2008) model is based on the presumption that IONs are in a constant process of change, and describes a sequence of stages over which the alliance reaches some stability. The first step consists of **Partner Selection**, a convenient combination of partner resources and potential contributions to the alliance. In the **Structuring and negotiation** stage, the partners decide on adequate leadership forms, the scope of collaborative activities and effective task share. After negotiation, the partners will then put the ION into operation in the **Implementation** stage. The fourth stage consists of **Performance evaluation**, which could result in the maintenance or rupture of the cooperative relationship.

A common view of the models

The seven theoretical models reviewed present different perspectives for the analysis of the ION life cycle. The authors do not agree on the development stages, which may vary according to the type of interorganizational relationship. Some authors follow the logic of a biological life cycle model with beginning, development and decline stages (D'Aunno & Zuckerman, 1987; Dwyer *et al.*, 1987). Another study finds analogies with interpersonal relationships, comparing the stages of the IORs life cycle to the evolution of a relationship (Zineldin, 2002). In addition, each author adds other stages or uses different terms in their model. The Ring and Van de Ven's (1994) model stands out by presenting a proposal that considers the cyclical character of the evolution and development of IORs. The authors were not concerned with presenting stages.

Models also differ in respect to dimensions or criteria proposed for analysis of IOR development stages. The importance of interpersonal relationships and member's motivation are cited as relevant factors to incite cooperation (Ring & Van de Ven, 1994; Spekman *et al.*, 1998; Zineldin, 2002). The role of trust is also widely recognized by literature (Bachmann, 2001; Krishnan, Martin, & Noorderhaven, 2006; Sydow, 1998) as a key dimension to foster cooperation. It works as a complement for formal governance and is called relational governance (Poppo & Zenger, 2002; Yu, Liao, & Lin, 2006; Zaheer & Venkatraman, 1995). Trust stimulates information exchange and influences network members to share knowledge (Inkpen & Tsang, 2005) not available for those outside the circle of trust (Leana & Pil, 2006).

Formulating rules and norms for cooperation (Dwyer *et al.*, 1987) is mentioned as well. It refers to network governance - the design of the structure and mechanisms of SFNs internal coordination (Provan & Kenis, 2007; Theurl, 2005). Another dimension of analysis noted in the models refers to a need for strategic and cultural adjustment amongst partners as a requirement for further cooperation (D'Aunno & Zuckerman, 1987; Zineldin, 2002). The literature also highlights the importance of network management in order to reach collective goals (Hibbert, Huxham, & Ring, 2008). Management of a network implies constant negotiations between a group of autonomous organizations (Järvensivu & Möller, 2009) demanding special skills from leaders (Provan & Lemaire, 2012).

Even though many studies containing life-cycle models have been identified, empirical ones exemplifying the application of the model to existing IONs are scarce. Amongst the presented studies, only that by Ahlström-Söderling (2003) empirically analyzed business networks. The author selected a SFN from the furniture industry to serve as a case study out of a set of thirty-two cooperative agreements, which included local development projects, in vertical and horizontal networks.

In the Brazilian context, several studies highlighted the motivations for cooperation (Verschoore & Balestrin, 2008a), network outcomes (Castro, Bulgacov, & Hoffmann, 2011; Marchi, Cassanego, & Wittmann, 2012; Verschoore & Balestrin, 2008b), learning processes (Balestrin *et al.*, 2008; Estivalete, Pedrozo, & Cruz, 2008), difficulties faced by IONs (Esteves & Nohara, 2011; Wegner & Padula, 2012) and cooperation management (Bortolaso, Verschoore, & Antunes, 2012; Kwasnicka, 2006). However, only a small number of studies examined network developmental trajectories (Bortolaso *et al.*, 2012; Camargo, Verschoore, & Padilha, 2013).

Camargo, Verschoore and Padilha (2013) described the development process of a building supply store SFN in Brazil. The change of a shared governance model to a Network Administrative Organization (Provan & Kenis, 2007) allowed the SFN to establish more complex goals, increase member cohesion and intensify relationships. Bortolaso *et al.* (2012) analyzed the management of twelve Brazilian SFNs and concluded that cooperative strategies are still at a low level of development in most networks. Only four SFNs were at a high stage of development of cooperative strategies. The results show that SFNs need to improve their strategic management in order to achieve higher levels of development and remain active in the market.

Methodology

The main research objective – to create a proposal for a SFN life-cycle model and apply it to a set of business networks – determined the need to follow an exploratory methodological strategy, aiming for a better definition of the phenomenon; and a descriptive strategy in order to establish standards and classifications (Cooper & Schindler, 2008). This strategy was supported by a qualitative (Cassell & Symon, 1994), constructivist and interpretative approach following an inductive character (Creswell, 1994; Gray, 2008).

The research was designed in two stages. The first one focused on the elaboration of a life-cycle model for SFNs based on expert interviews. Seven Brazilian experts in the field of interorganizational cooperation were interviewed: three academics (A1, A2 and A3), two network managers (NM1 and NM 2) and two business consultants (C1 and C2). All experts were selected due to their expertise. No theoretical model found in literature or being discussed in the previous section was introduced to avoid any bias risk; and no SFN life-cycle model sketches were brought up during the interviews. The interviews were carried out at the end of 2011 and the first semester of 2012 and recorded and transcribed for further analysis.

A semi-structured research protocol was designed. This protocol was divided into three blocks: (a) Description of stages or phases characterizing SFNs life cycle according to expert opinion; (b) Dimensions or criteria to be checked in order to understand and place SFNs in a particular stage or phase; (c) Description of each dimension particularities for every life-cycle stage. A preliminary life cycle model was then elaborated based on a comparison of the stages suggested by the experts. The model consists of six stages or phases characterizing a development pattern SFNs may go through in their lifetime (Conception; Birth and Formalization; Development; Consolidation and Maturity; Decline; Dissolution). Each life-cycle stage presents features distinguishing one another with respect to specific dimensions. Finally, to validate the model it was once again submitted to the experts who evaluated the proposal.

To determine the dimensions or criteria relevant for analysis of a SFN development stage we considered only those suggested by a minimum of four experts: network management; network governance; definition of network processes; level of services offered by the SFN to the members; engagement and commitment; information exchange; trust and interpersonal relations.

The second step of the research relied on an appraisal of twenty-eight SFNs established between the years 2000-2012 throughout two regions in Southern Brazil. The regions were selected using as reference the operation of a public program supporting the creation of SFNs in the area during a ten-year period (Sedai, n.d.). Although results cannot be generalized for the whole group of Brazilian's SFNs, access to the SFN population of in these regions permitted delimiting the analysis and comprehending SFN development patterns.

An interview with two representatives of each SFN was carried out to collect data. These representatives preferably consisted of the CEO and a randomly selected member firm. A second interview with a member firm aimed to reduce bias in any information provided by the CEO. This procedure follows Flick's (2009) suggestion to select people with the most knowledge on the issue and preferably with different points of view. In case the SFN was inactive or closed, only the final person in the CEO's position was interviewed. The interviews were carried out from August to December 2012 and each one lasted around 30 minutes.

The research protocol was structured in three blocks of open questions (Appendix). The first block aimed to identify and characterize the SFN. The second one aimed to describe the SFN according to the dimensions pointed out by the experts in the first stage of the research. Lastly, the third block attended to the evolution and dynamic of the SFN along its lifetime. Research protocol was subjected to a pretest with two SFNs to verify external reliability and adequacy to the proposed theoretical model. The pretest did not indicate any adjustment needs to the research protocol.

Once the interviews with the SFN representatives were concluded, the research team carried out content analysis to classify each SFN, comparing its characteristics with the description given by the experts for each dimension on the life-cycle stages. Content analysis is defined as a qualitative and systematic analysis of message characteristics (Neuendorf, 2002) that are more likely to succeed when the analysts are concerned with understanding institutionalized phenomena (Krippendorff, 2013). This content analysis was carried out under Neuendorf's (2002) recommendation for methodological steps; which, in this case consisted of theorization, conceptualization, and operationalization, coding schemes, tabulation and reporting.

To lessen possibilities of misjudged classification, each SFN was analyzed separately by two researchers. If a discrepancy between the researchers stood out, another analysis was then performed by a third researcher before the final classification. Flick (2009) suggests that a triple angle of perspectives over the data from different researchers increases the quality and reduces misjudgments in the analysis.

Results

The results are presented in three sub-sections. In item **Proposed life-cycle model**, the life-cycle model developed and the dimensions for analysis suggested by the experts are found; in item **Evaluation of established SFNs**, the evaluation results of the twenty-eight SFNs under analysis are shown; final section consists of discussion.

Proposed life-cycle model

Throughout the first round of expert interviews each was asked to describe his/her perception of SFN life-cycle stages and dimensions or criteria allowing the evaluation of SFN development. Similar to the models in the theoretical review, the experts agreed SFNs are characterized by a beginning (Birth and Formation), a middle (Development and Consolidation) and an end (Decline and eventual Closure). At this point in the research, the number of stages varied according to the level of detail with which each expert described the development of SFNs. In addition, the need for change and restructuring in the SFN was considered relevant to preserve its development.

Expert A1 suggested that SFNs evolve in a circular, not linear, manner once the networks require continuous updating. The **Dating** stages occur first via alignments, goal setting and evaluation of future cooperation. This stage is followed by the **Introduction** stage, when the SFNs are already formed and the first joint actions begin. From the **Development** stage onwards, the SFNs start to mature via negotiations, collective strategies and standardized tasks until reaching the **Maturity** stage, during which the strategies are in full operation and expansion may take place. For the SFN to continue advancing, it must begin the **Innovation** stage and aggregate more services in its portfolio. If this aggregation does not occur, the SFN falls into **Decline**, which can lead to **Dissolution** when members end connections with the network and cease activities.

Experts A2 and NM2 noted a simplified life-cycle composed of four stages. A2 labeled these stages as follows: the first is named **Formation**, which is the moment of members' prospects towards similar goals, followed by **Consolidation**, which consists of the elaboration of a network management structure. If a descending cycle takes place, **Members Exit** occurs; this stage occurs when members do not carry out advantageous activities in the network, which leads to **Network Termination**. This set of stages is very similar to the one noted by NM2, who characterizes the life cycle via **Birth**, **Grading**, **Maturity** and **Decline** stages.

Two experts presented a proposal that considers only the ascending stages of the network development. C2 described a cycle with an **Initial** stage, focusing on meetings and task sharing amongst members. When a group already considers the possibility of contracting a manager, the SFN

has arrived at the **Development** stage. Following this stage, **Maturing** occurs. During this stage, solutions for a brand name and negotiations are noticeable, and the SFN begins to expand and attract new members. The fourth stage is **Consolidation**, which occurs when the SFN already contains a structured management group and members show a high level of relationship and mutual commitment. Expert NMI suggested dissimulating the network development via **Consolidation**, **Consolidated** and **Post-Consolidated** stages when the SFN has a services portfolio to offer members and holds a professional management team.

Finally, two interviewees (A3 and C1) suggested life-cycle models with six stages, which allowed for a more precise understanding of the network development. A3 coined the first stage as **Constitution**, which consists of identifying the key-members to conduct the process and the selection of basic goals. This stage is followed by **Initiation**, which consists of network formalization and legal constitution. The next stage is divided between the phases of **Basic Development**, when the ground rules are established, and the **Advanced Development** phase, during which joint actions are realized and the partners improve their own management to follow the cooperative strategies. At the **Consolidation** stage, the SFN must decide to limit its activities to only the ones realized collectively or establish new goals, develop new services and renew its strategies. As suggested by interviewee A1, an SFN can enter **Dissolution** if it does not renew itself.

Interviewee C1 described an ideal life cycle where the **Growth** stage may be reached only after the stages of **Group Formation**, **Development**, and **Maturity** have been overcome. He stated that a common mistake made by SFNs is to seek geographical expansion and participant growth without first resolving relevant internal issues. The fifth stage suggested by C1 is **Maintenance**, which occurs when the network already holds its own management structure and acts as a large organization. However, **Decline** begins if this stage cannot be secured, during which participation and commitment lessens.

A SFN life-cycle model was proposed based on the experts' suggestions. It consisted of six stages: **Conception**, **Birth & Formalization**, **Development**, **Consolidation & Maturity**, **Decline** and **Dissolution**. In addition to these six stages, experts indicate that the SFNs experience transformations during their life cycles as an essential condition to avoid decline and dissolution. A SFN can only remain in the Consolidation stage when it deliberately restructures its activities to keep partners interested in the cooperative activities. Nevertheless, a SFN can fall into Decline due to inertness even after reaching the Consolidation stage. Without recurring network restructuring, firms may have no reason to continue cooperation because new benefits to justify cooperation are lacking.

Figure 1 presents the life-cycle model that describes the suggested path by the experts from Conception to Consolidation and highlights the dysfunctions that may lead to Decline and Dissolution of a SFN at any development stage. In the first stages of a SFN, for example, it is common for a natural selection process to take place. Entrepreneurs that feel unsure of benefits cooperation may bring or that are not aligned with collective goals may choose to leave. After the Development stage a SFN may come to critical crossroads and large efforts may be necessary to reach consolidation; otherwise, the decline process may begin.

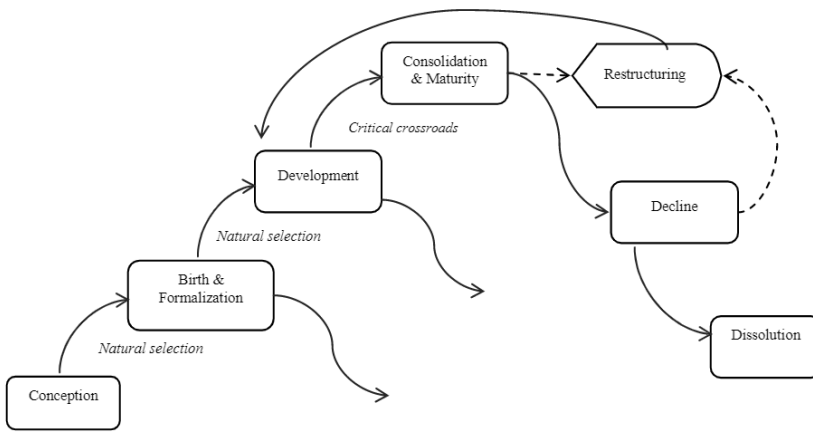


Figure 1. Life-cycle Model of Small-Firm Networks (SFNs)

The peculiarities of each life-cycle stage can be comprehended by analyzing a set of dimensions or criteria characterizing this type of interorganizational relationship. To identify the most relevant analysis dimensions all expert suggestions were listed and compared, as shown in Table 1. A total of twelve dimensions were brought up and seven out of twelve indicated by a minimum four experts: network management, network governance, definition of network processes and level of services offered by the SFN to the members, engagement and commitment, information exchange, trust and interpersonal relations.

Table 1

Dimensions of Analysis Pointed Out by Experts

Expert	Dimension											
	Common brand	Engagement /Commitment	Expansion	Governance	Information exchange	Leadership	Management & strategy	Member's profile	Member's selection	Processes and routines	Services portfolio	Trust
Academic 1		x			x	x	x	x		x	x	
Academic 2	x	x		x	x		x				x	
Academic 3		x					x	x		x		x
Network manager 1	x		x	x		x	x			x	x	
Network manager 2		x			x		x					x
Business consultant 1		x		x	x	x	x			x	x	x
Business consultant 2		x	x	x			x			x	x	
Number of citations	2	6	2	4	4	2	7	1	1	4	5	4

Many of the dimensions pointed out by the experts are similar to those cited by literature on cooperation, such as network governance (Dwyer *et al.*, 1987; Provan & Kenis, 2007; Theurl, 2005), network management (Hibbert *et al.*, 2008; Järvensivu & Möller, 2009), learning and information exchange (Inkpen & Tsang, 2005; Leana & Pil, 2006) and trust (Bachmann, 2001; Krishnan *et al.*, 2006; Ring & Van de Ven, 1994; Sydow, 1998; Zineldin, 2002). However, other dimensions were considered relevant by experts for SFN success, such as the need for member commitment and participation in collective activities, definition of collective processes and the creation of a services portfolio offering support to network members' activities.

Once the stages that compose the life-cycle model were identified and the dimensions for analysis were set, they were again submitted to the seven experts. The experts were asked to describe each analysis dimension through all life-cycle stages to generate a matrix of information. The features of each life-cycle stage could be elaborated based on the compilation of all answers as follows:

1st stage: Conception. Entrepreneurs meet to discuss cooperation possibilities. The network governance is under development. Entrepreneurs show a high level of participation in proposed activities and commitment towards defined actions due to the state of motivation in relation to the potentialities of a collective work.

2nd stage: Birth and Formalization. The SFN moves from being just a project to being formalized by the members who define a management board, executive councils and work teams. The shared governance model is chosen, in which the members themselves are responsible for the activities.

3rd stage: Development. The management structure and main processes have been defined and are adjusted in this stage, resulting in improvements in the governance structure. Information and managerial experience can be freely exchanged, which strengthens social relations within the group.

4th stage: Consolidation and Maturity. The SFN takes its management to a professional level, hiring an executive manager and employees to manage activities. The elected board is responsible for strategic decisions. The governance is now run by a Network Administrative Organization (NAO). A group of more engaged and committed entrepreneurs stands out, while others take advantage of the benefits with little participation.

5th stage: Decline. A lack of adjustments and improvements to the structures, processes and governance leads to discrediting amongst partners. Side groups appear with self-interests that try to influence management and cause internal competition for power and space in the network management. Most entrepreneurs prioritize sole action within their own firms instead of collective goals.

6th stage: Dissolution. Although a management board may still be in place, it no longer manages the network. The SFN experiences neither structured management nor does it offer services. Governance rules are no longer followed. Network members are no longer committed, and participation in the activities is almost null. Most members leave the network, and only the ones strongly interested in cooperation remain.

Restructuring, which has been cited by many experts, is not an explicit stage of the SFN life cycle but a necessary situation to ensure the network will persist over time. According to the experts, even consolidated SFNs need to pass through transformations to avoid decline and dissolution. This need is justified by change in resource bases, information bases and expectations of the member firms over time (Ebers & Grandori, 1997). Moreover, firms continually expect a higher level of benefits from the SFN, even if they could not obtain the advantages provided by the collective strategies when operating independently.

In the consolidation/maturity stage, the internal environment favors strategic changes once a structured management, a high level of benefits, exchange of information, high interpersonal trust and a clear strategic direction are in place. However, promoting deeper transformations can be difficult

when the SFN finds itself in the decline stage, as the internal environment is not favorable and keeping entrepreneurs interested in cooperation is more challenging. As opposed to individual firms that show a clear hierarchy, the relationships in a SFN are predominantly horizontal and members have autonomy to leave the group once they feel unsatisfied or believe the benefits received do not compensate for the costs of cooperation. Some SFNs in the decline stage may promote modifications to move the network towards development again; however, such a change requires a significant effort and a group of partners highly motivated and committed to the proposal.

Evaluation of established SFNs

The life-cycle model was applied to SFNs in two regions in southern Brazil. Given the economic importance of these regions, the government included them in a program that supported SFN creation starting in the year 2000. The program was implemented in a partnership between the public sector (responsible for financing the program and creating the supporting methodology) and the regional university (Verschoore, 2004), which was aware of the local reality and provided institutional legitimacy to approach potential entrepreneurs. The public program was carried out between 2001 and 2010 in the selected regions, with the exception of some inactive periods due to changes in the government and budgetary restrictions. The first contact with the mapped networks consisted of verifying if the SFN was fully running and formally registered. Of the 28 business networks, 14 were found closed and 1 had become a general association and was no longer working as a SFN.

On average, closed SFNs operated for three years from start-up to formal closure, although they may have been inactive even before officially deactivated. Most of these SFNs were composed of a small number of members at the time of formation, varying between 6 and 13 firms. A reduced number of members puts benefits generated from scale profit at stake, such as negotiating with suppliers, a strong collective brand, marketing campaign releases and acting to improve business competences. Moreover, the number of participants declined over time in almost every case, which weakened the cooperation and increased the difficulties in generating results that could attract new firms.

The interviewees noted several aspects that led them to close the SFN, such as work overload on a small number of members in charge of organizing activities, lack of commitment from many participants (which reduced remaining members' motivation), the differing business profiles amongst network members and insignificant outcomes from the collaborative strategies. However, one of the causes cited by a number of interviewees was the dependency of the SFN on the public program and the lack of continuity of consulting support offered by it. Five SFNs reported difficulties in advancing the collaborative strategies without public support, which was responsible for the structuring of activities and providing legitimacy towards any action developed.

Overall, 13 of the 28 SFNs established in the analyzed regions are still in operation and were classified within the proposed life cycle. Each SFN was evaluated in the seven dimensions of analysis based on the interviews carried out with network members. Such appraisal, taken individually by two researchers, resulted in the classification of SFNs, according to the Table 2.

Table 2

Classification of Active SFSS

Id	Business sector, opening year and initial number of members	Dimensions of analysis							Classification (network stage)
		Governance	Management	Processes	Services	Engagement	Trust	Information exchange	
SFN1	Farm supply shops (2010) 22 members	Birth & Formalization	Birth & Formalization	Birth & Formalization	Birth & Formalization	Development	Development	Development	Development (initial)
SFN2	Electrical supply (2004) 14 members	Development	Development	Development	Development	Development	Consolidation & Maturity	Consolidation & Maturity	Development (advanced)
SFN3	Car dealers (2006) 35 members	Development	Development	Development	Development	Consolidation & Maturity	Development	Birth & Formalization	Development (advanced)
SFN4	Steel industries (2008) 16 members	Development	Development	Birth & Formalization	Development	Development	Consolidation	Development	Development (advanced)
SFN5	Information tech (2008) 15 members	Birth & Formalization	Development	Development	Decline	Decline	Development	Development	Development (critical crossroads)
SFN6	Bakeries (2006) 13 members	Development	Decline	Development	Development	Decline	Consolidation	Consolidation	Development (critical crossroads)
SFN7	Paint shops (2008) 14 members	Development	Development	Consolidation & Maturity	Consolidation & Maturity	Consolidation & Maturity	Consolidation & Maturity	Consolidation & Maturity	Consolidation & Maturity
SFN8	Drugstores (2005) 11 members	Consolidation & Maturity	Consolidation & Maturity	Consolidation & Maturity	Consolidation & Maturity	Decline	Consolidation & Maturity	Development	Consolidation & Maturity
SFN9	Building supplies (2005) 4 members	Consolidation & Maturity	Consolidation & Maturity	Development	Consolidation & Maturity	Development	Consolidation & Maturity	Development	Consolidation & Maturity
SFN10	Agro-industries (2005) 6 members	Dissolution	Dissolution	Dissolution	Decline	Decline	Decline	Decline	Decline

Continues

Table 2 (continued)

Id	Business sector, opening year and initial number of members	Dimensions of analysis							Classification (network stage)
		Governance	Management	Processes	Services	Engagement	Trust	Information exchange	
SFN11	Child Care Centers (2004) 13 members	Decline	Decline	Decline	Decline	Decline	Decline	Decline	Decline
SFN12	Nurseries (2004) 19 members	Dissolution	Dissolution	Dissolution	Dissolution	Dissolution	Dissolution	Dissolution	Dissolution
SFN13	Veterinary shops (2009) 13 members	Dissolution	Dissolution	Dissolution	Decline	Dissolution	Dissolution	Dissolution	Dissolution

Six of them were identified as SFNs under **Development**. They passed the conception and definition of the cooperation scope, have been launched in the market and have been officially formalized. Governance rules are defined, and all of them keep a shared governance model in which participants take part in all decisions and carry out management tasks without hired professionals (Provan & Kenis, 2007).

However, SFNs are under different development stages even within this group: one of them is at the initial development stage, three are moving towards consolidation and the other two are facing critical crossroads according to the description of D'Aunno and Zuckerman (1987). These two SFNs generate benefits to members, but the entrepreneurs described a decline in motivation within the group and a reduced level of participation from members towards collective actions and presence in meetings. A member of SFN5 (Development – critical crossroads) mentioned that he notices that “some entrepreneurs just wait for benefits... Only part of them participate effectively in meetings and challenge problems faced by the network”. If such SFNs can once again motivate members and develop new collective actions, they may reach a consolidated level; otherwise, they may face decline. Estivaleta, Pedrozo and Cruz (2008) stressed that in the development step the business networks have a shared learning process through exchange of information between the actors and this is due, in large part, to the engagement and degree of trust between network members.

Only 3 SFNs were classified in the **Consolidation/Maturity** stage, the top level in the life cycle. They stand out for offering a wide service portfolio to members and are able to generate significant benefits to member firms. In addition to collective purchases and marketing actions, SFNs offer staff training and courses to improve services and consumer attention.

In addition, consolidated SFNs have changed the shared governance for a Network Administrative Organization (NAO) in which professionals hired by the network carry out management tasks under the supervision and monitoring of the member firms (Provan & Kenis, 2007). According to a member of SFN7 (Consolidation & Maturity) “now we have an executive that manages all the network activities”. Another member of SFN7 stated “we decided to hire a professional manager to coordinate the activities so that we can have a better organized governance structure and the network can grow”. As suggested by Camargo *et al.* (2013), a Network Administrative Organization allows the SFN to establish more complex goals and strategies.

This necessary change in network governance to reach consolidation stage reduces members' participation in the operational functions of SFNs; however, they remain with all strategic definitions under their control. As observed by a member of SFN8 (Consolidation & Maturity), the board of directors composed of network members concentrates the decision making process: “before decisions were made at meetings with the participation of the majority of the members... Now decision-making meetings are held only by the board of directors and it is working much better”. Contrary to the idea of D'Aunno and Zuckerman (1987), who stated that this transition may be difficult because network members delegate authority to executives, the interviewed entrepreneurs considered this transition to be positive.

SFN9 (Consolidation & Maturity) experienced a restructuring process and restated development as foreseen by the life-cycle model. The SFN had implemented a distribution center which took a very large proportion of financial resources and management efforts leading to a “loss of control and focus. There was high financial turnover with little result” (SFN9 member). Restructuring was necessary to guarantee the network viability. Without restructuring the SFN could have fallen into a decline process due to difficulties in keeping members interested in cooperative activities. SFN7 and SFN8 accelerated consolidation via cooperation with another SFN in the same sector, which resulted in a scale gain and facilitated the implementation of professional management and improved relationships with suppliers.

Two of the SFNs are in **Decline**. These SFNs could not overcome the development stage and currently do not generate sufficient benefits to maintain the member firms interested in cooperation. In both cases, some firms exited the SFN and regular meetings amongst participants have ceased. Thus,

the established rules are no longer followed and little collective activity takes place. As said by a member of SFN11 (Decline), "At the beginning motivation was much greater... later there was increasingly diminishing interest and each member returned to work as sole proprietor".

The small number of participants in these two declining SFNs (5 firms in each) limited the scale gain and hindered the creation of a management structure in the network. Without hired managers, the entrepreneurs themselves needed to circumvent realizing operational activities. According to a member of SFN10 (Decline) "Our group is too small to afford someone to organize the network activities". The group relies on a small number of members to sustain the cooperative activities. When the most engaged members reduce their participation, the SFN tends to decline. In both cases, the interviewed people revealed the existence of few possibilities for restructuring that could lead to network development, and these SFNs will most likely fall into dissolution at some point.

Finally, two SFNs that were still formally registered were classified as networks in **Dissolution**. Without overcoming the development stage, the SFNs fell into decline and are currently very close to ending their cooperation. In each case, meetings with participants have ceased, and board directors are unable to mobilize the remaining members into action. Evident conflicts of interests within the group turn any forthcoming attempts into a struggle. A member of SFN13 (Dissolution) reports that "basically me and another member... only the two of us [perform all the activities]... It's always that way. Two or three [network members] that work and the others just observe what happens".

These two SFNs did not establish a management structure with autonomy and all tasks involving executing and supervising activities were under the responsibility of the management board. The failure to reach expectations caused problems and the exit of firms from the SFN, which resulted in decline and dissolution.

A joint analysis of the 28 SFNs reveals that only three networks – which represented less than 11% of the total – reached the Consolidation/Maturity stage, while the other 6 (or 21%) are at the Development stage. However, 68% of the SFNs formed at that time are either experiencing the Decline/Dissolution stage or have already closed. Considering only SFNs formed between the years 2000 and 2005, only one is at an ascending stage of the life cycle. All the others are in Decline/Dissolution and mostly closed.

Conclusions and Implications

The study relied on the call for research by Ebers and Grandori (1997) and the arguments of Jap and Anderson (2007), Jiang *et al.* (2008) and Cropper and Palmer (2008) who noted that few studies had been published on the dynamics of interorganizational relations. We proposed a model for analysis, carried out a research that validated the SFN lifecycle model set and identified the situation of twenty-eight SFNs in two regions in Southern Brazil.

The theoretical review indicated that models that describe the life cycle and the development stages of interorganizational relations focus on strategic alliances (Jiang *et al.*, 2008; Spekman *et al.*, 1998), client and supplier relationships (Zineldin, 2002) and partnerships (Dwyer *et al.*, 1987). Only the Ahlström-Söderling's (2003) model was created based on networks formed by small firms.

The idea of a life cycle makes sense, as unlike other types of interorganizational relationships, SFNs are not started up with a previously set closing date. SFN managers intend to develop strategies and generate benefits to keep networks on the rise in the life cycle model in order to create and maintain competitive advantages against competitors outside the SFN (Jarrillo, 1988). The first contribution of this paper is the proposal of a life-cycle model considering SFNs characteristics and describing the nuances of these cooperative agreements during all development process. Researchers and public policy makers may analyze SFNs based on this particular model to formulate more appropriate strategies for each business network according to its development stage.

The interviews with network members confirmed the stages described by the experts and the occurrence of a natural selection via the exit of firms within the initial stages of cooperation. These stages also highlighted crossroads to be overcome by SFNs. As noted by Åhlström-Söderling (2003), a network's leadership must be able to promote or accept changes when the network finds itself at the last ascending stage in the cycle, at risk of degeneration or closing. The interviews also confirmed that most SFNs analyzed fell into the stage of Decline early on in the life cycle, incapable of reaching Consolidation. Spekman *et al.* (1998) stated little is known about management requirements at different stages of an IOR life cycle. Our life-cycle model highlights that major managerial efforts are necessary to reach the consolidation stage due to the network's complexity and expectations of network members.

The second contribution of this paper is the identification of strategies adopted by SFNs to reach the status of consolidated networks. The literature on interorganizational cooperation describes IOR developmental processes (Åhlström-Söderling, 2003; D'Aunno & Zuckerman, 1987; Spekman *et al.*, 1998) but only marginally addresses the strategies networks could adopt to reach consolidation. Inter-cooperation and mergers among SFNs evidenced in this study are strategies for growth adopted by networks in other countries and have been noted as a trend in Brazilian SFNs (Wegner & Padula, 2011). As a managerial implication, results highlighted the consolidation of SFNs may be fostered through cooperation with other networks, facilitating scale gains and cost share, as well as the creation of a management structure for the SFN. Taking into account the large number of SFNs operating in Brazil (Sebrae, 2012), managers and entrepreneurs could find potential partnerships to cooperate or merge with.

This study also offers subsidies for public policy makers. Closed SFNs highlighted the difficulties faced by the lack of continuity in the public program, pointing to the relevance of maintaining a follow-up strategy during the development process of SFNs. Furthermore, the closed SFNs were formed with a small number of members and ended cooperation with an even smaller number. It indicates a need to create larger SFNs able to generate benefits to support cooperation. Based on an examination of retail networks composed of small firms, scale gains and cost share can only be manageable with a significant number of participants. In fact, SFNs of any sector holding a larger number of members favor the creation of a management structure with professional managers in place.

From a managerial point of view, the proposed model allows managers to identify the stage of a SFN analyzing its characteristics. The awareness of all aspects involved in each life cycle stage leads towards actions to develop lacking characteristics and make advances towards consolidation more manageable. Lastly, the model resulting from this study and the empirical evidence reinforces the relevance and the role of interpersonal relationships and management efforts throughout all stages of an ION's life cycle, as also noted by other studies of interorganizational relationships (Provan & Kenis, 2007; Wegner & Padula, 2012).

Our research provided just preliminary validation of the proposed SFNs' life cycle model, since the analyzed sample may not be considered representative of Brazilian SFNs population. We recognize this as our major research limitation and encourage other researchers to further test the new life cycle in a different context and types of business networks. Future studies may analyze the situation of a larger sample of Brazilian SFNs and identify strategies adopted by consolidated networks to reach this stage. By analyzing why SFNs fall into decline may also help to shed more light on the dynamics of business networks and avoid SFN dissolution.

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APPENDIX

RESEARCH PROTOCOL

Small-firm Network:

Interviewee:

Position in the SFN:

Previous positions in the SFN:

Length of participation in the SFN:

BLOCK 1: SFN CHARACTERIZATION

Business segment:

SFN's first formation meeting dates:

SFN's launching date:

Number of member firms at launch:

Number of member firms in 2012:

Was the SFN part of any program linked to SEBRAE or the State Government?

BLOCK 2: ANALYTICAL DIMENSIONS

1. **GENERAL.** What activities and projects is the SFN currently performing?
2. **SERVICES OFFERED.** What services are provided by the SFN to members?
3. **SERVICES OFFERED.** Do all members make use of these services?
4. **MANAGEMENT.** How is the SFN's management structured? Who is responsible for the SFN's management?
5. **MANAGEMENT.** Regarding the SFN's startup period until the current situation; would you say management is more professionalized and better structured now? Please explain.
6. **MANAGEMENT.** Are there people leading the SFN and mobilizing members? Do they hold positions in the Board of Directors?
7. **PARTICIPATION.** How do you see member participation in activities performed by the SFN nowadays?
8. **PARTICIPATION.** Was there a higher rate of member participation in the SFN's activities in the past?
9. **PARTICIPATION.** What led to such changes?
10. **COMMITMENT.** At the moment, how do members get involved with activities developed by the SFN?
11. **COMMITMENT.** Did you notice members were more involved with the SFN's activities in the past or do you believe the peak is right now? What caused these changes in commitment?
12. **GOVERNANCE.** Are there clear rules in place on decision making in the SFN, on incentives and punishments members may receive, and also rules on how to perform member firm monitoring?
13. **GOVERNANCE.** Are these rules actually followed or just a formality?
14. **GOVERNANCE.** Have there been any changes to these rules since the SFN's formation?
15. **INFORMATION EXCHANGE.** Can you please describe how information is exchanged amongst member firms and how often does it happen?
16. **INFORMATION EXCHANGE.** Do you believe member firms used to exchange more information or, may I say, more strategic information in the past?
17. **INFORMATION EXCHANGE.** What explains this change, in your opinion?
18. **INTERPERSONAL RELATIONS.** How are interpersonal relations amongst members currently?
19. **INTERPERSONAL RELATIONS.** Are there conflicts within the SFN jeopardizing the progress of activities?
20. **PROCESSES.** Are all SFN processes and routine work well-described? Is there documentation showing mapped activities performed by the SFN?

BLOCK 3: CRITICAL EVENTS

21. Were there firms joining in the SFN or leaving it since its creation?
 22. At what point did this happen?
 23. How did it impact the SFN?
 24. In your opinion, were there critical events (positive or negative facts) along the SFN's existence that influenced its lifetime? Please describe these events.
 25. How do you see the SFN in the future?
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