INNOVATION NETWORK SMEs: Determinants and Social Consequences

Angela Ruriko Sakamoto (PhD, professor at Centro Universitário Luterano de Palmas – Palmas, TO, Brazil angelars@ceulp.edu.br)
Marcos Augusto Vasconcellos (PhD, professor at FGV/EAESP – São Paulo, SP, Brazil)

Abstract
The innovation emergence in SMEs network was researched using Group - Sãoned Theory; data from 36 factories visits and 3,700 minutes of interviews were transcribed and analyzed. It was evidenced network’s pro-collective orientation that allowed us to understand the collaboration dynamics those results in innovation and which promotes social change around them.

Key words: collaborative network, innovation, SME, GT

Introduction
Firms’ innovation capability has become a critical factor for productivity and competitiveness. Advances in information technology, communication and globalization have increased competition and simultaneously created opportunities for co-located businesses to work together to form innovative clusters for technological upgrading and diversification (Carayannis and Wang, 2006; Porter, 1985; OECD, 1999). Here, we focus on how an agglomeration of small and medium enterprises located in an emerging economy can collaborate effectively to increase their ability to innovate.

Research studies of small business have often been based on theoretical perspectives developed for larger companies, but this extrapolation should be treated with caution, as a small business is not a big company in reduced scale (Welsh and White, 1998, Gibb 2000). Indeed, the literature review by Tan, Fischer, Mitchell and Pan (2009) suggests that little research effort has been devoted to SME theory building from a small businesses setting, and that even less theory building has been done in the case SMEs' external relationships in the network context (Street and Cameron 2007). Rather, studies have tended to focus on individual, organizational and environmental characteristics which affect the formalization of relationships, and their subsequent performance, organizational development and competitive advantage rather than focus on the evolution of these relationships, and their impact on future relations. The contribution of our research is to generate a substantive theory to help us understand and explain how innovation emerges and to explore which factors contribute or inhibit this process in an SME collaborative network.

To focus our research, we sought a network that had an established record of acting collaboratively and which has been generating concrete results from this collaboration. With that in mind we approached the Forum for Innovation, sponsored by companies and EAESP/FGV, and the Brazilian Service of Support for Micro and Small Enterprises (SEBRAE). The MOVElaria Paulista (MP) was nominated by SEBRAE as an example of
Local Productive Arrangement (LPA), whose behaviour, practice and work represent an example of good practice and provide a valuable reference to other associations. In 2011, The MP consisted of 57 companies that are part of a complex of more than 3,000 furniture companies in the metropolitan region of São Paulo, accounting for more than 15 thousand formal jobs. During the period of 2004-2007, this group was able to raise their revenue by 31.4% and increase their employment by 28.7%.

Innovation in SME's collaborative networks in emerging economies is influenced by its historical and cultural context, by different entities, especially the government, and becoming a complex phenomenon that cannot be sufficiently explained by one theoretical perspective in the literature. Therefore, in order to investigate the collaborative process at MP as an intersubjective experience of social actors, without any pre-conceived theoretical approach, it was decided to use the Grounded Theory (GT) as research methodology.

The article begins with the presentation of the research design and its methodological aspects, then the field research and theoretical elements of the MP’s collaboration dynamics are exposed. The propositions suggested are then evaluated through a comparison with the current theoretical mainstream. Finally, closing this article the concluding remarks of this study, future studies propositions and practical application in small business networks are explored.

**Research Design and Methodology**

To address the research question: “How do innovations arise from collaborative network relationships between organizations?”, and the desire to understand the answer within a social context we sought to develop an appropriate research project. To support this decision, Guba and Lincoln (1982) emphasize that it is essential to position the researchers in their ontological and epistemological beliefs, since these beliefs influence how the world is viewed and guide researchers’ actions. Burrel and Morgan (1979) classified these positions on two axes, and the nature of science (objective-subjective) and the nature of society (order-conflict), proposing four broad paradigms: functionalist, interpretive, radical humanist and radical structuralism.

Here we adopt the interpretativism lens, subjective as nature of science and a social context that seeks order. Although we are more aligned to proposal that encourages researchers to reflect on the proximity of the Complex Thought from Edgar Morin (2006), which recognizes that different paradigms can coexist and “we must regroup the knowledge to seek the understanding of the universe, returning a knowledge that is asleep, regrouping unity and diversity”. In Morin’s opinion researchers should include the specialized competencies in a natural context, as a whole, he proposes the knowledge hierarchy and organization in the contemporary thoughts: “We must contextualize each event, because things do not happen separately ...”. He points out the importance of historical context in the citizens training and the challenge of complexity is exactly the understanding of “our community destinies”.

The complex context and reality of this study suggest the need for a flexible approach which enables the evidence to shape our conceptualization of innovations in collaborative network of small enterprises. According to Goulding (2002), GT is essentially a qualitative research method for collecting and analyzing data and it is independent of the underlying epistemology. This means that GT is as Glaser describes a "paradigmatically neutral" (Urquhart, 2001), which makes possible an investigation using multiple paradigms (Bryant and Charmaz, 2007), therefore suitable for the purpose of this research.
**Methodology**

The researchers’ ontological and epistemological positioning and the research question led us to choose GT approach to guide this research. There are several definitions of GT, the first made by the creators, Glaser and Strauss (1967), defining it as “the discovery of theory from data – systematically obtained and analyzed in social research”. A more detailed definition is as follows:

The methodological thrust of GT is toward the development of theory, without any particular commitment to specific kinds of data, lines of research, or theoretical interests ... Rather it is a style of doing qualitative analysis that includes a number of distinct features ... and the use of a coding paradigm to ensure conceptual development and density (STRAUSS, 1987).

The two key points related to GT are: (a) it does not use a predefined theoretical framework; and, (b) analysis and conceptualization use the core process of joint data collection and constant comparison. The first point relates to the importance of the researcher not starting from a pre-defined theoretical framework. This is not, in fact, an accurate representation of the position of Glaser and Strauss which is more subtle and deserves a clarification. The aim is to ensure that the researcher uses a more inductive than deductive approach, and “listens” to the data instead of imposing preconceived ideas. The other key point concerns the circularity of data comparison that is the center of GT as a method, in simplified explanation is the process of comparing instances have already labeled to a particular category with other slices of data, whether these categories are adjustable and feasible. If they are, the slices overlap and we have what Strauss (1987) and Glaser (1992) called the “theoretical saturation”. This work makes use of Corbin and Strauss approach to analyze data, believing that it provides clear guidance to allow more abstract theorizing and avoiding the potential pitfalls and complexities of Glaser’s axial coding.

**Research Design**

In order to develop a suitable project design to address the question, "What factors promote or inhibit innovation in SMEs' network?" and at the same time explain the innovation phenomenon at MP’s social context, we adopt a research model driven by action (research as a model of action) recommended by Hatchuel (2001) and Shani et al. (2008). Another important decision was the positioning to which GT theoretical stream would be adopted to conduct the data analysis, although initially convinced by the Charmaz approach, but for being the first time using GT technique, we opted for a more systematic and structured proposal from Corbin and Strauss (2008). Nonetheless, more laborious, it facilitates the analysis conduction within GT premises. In addition, we adopted the software Atlas/ti, as the tool of Computer- Assisted Qualitative Data Analysis (CAQDAS) from the beginning, which was greatly helpful in the coding process and data analysis stages.

The research project was drawn up (see Fig.1) considering the Scope Setting (1) to define the research question and its scope. The Research Strategy (2) included the research methodology definition, the negotiation with MP to be the field research and the establishment of research guidelines. The dotted area (3) includes the processes of abductive theory building which are confronted to the current literature review in step (4), thereafter we could come after with the substantive theory (5) regarding innovation in the MP.
The research design for this study comprises two main elements: the field interaction and subsequent desk based research on the circularity of data comparison. ATLAS/ti was used as a tool to support and facilitate all documentation required by GT. Accordingly, the research design in summary is:

- The first set of data were collected from February to August 2009 and involved: 11 interviews (2 SEBRAE's managers; 2 trade unions' representative; 1 manager from Agency for Economic Development of Greater ABC; and 6 entrepreneurs) total 1068 minutes recorded and transcribed; 2 factories visit and participation in 4 meetings as an observer – 1,968 minutes of field interaction.
- The primary data were analysed using the procedures and techniques suggested by Corbin and Strauss (2008) for coding and increasing the theoretical awareness. For the first round of open coding 6 interviews were chosen, totalling 630 minutes (553 quotations, 164 memos, 74 categories and 5 core categories)
- In 2010 second semester were conducted: 34 semi-structured interviews and factories visits (2,580 minutes), two planning meetings and two forums were held - 3,420 minutes of field interaction.
- The core categories dimensions and properties were refined and a reencounter with the current literature was done.
- 2011 first semester run the substantive theory validation.
- December/2013 research field was revisited.

The field research activities were negotiated in order to: facilitate a collaborative approach (Shani et al., 2008), mitigate the impact of an external observer, be open to their demands and be collaborative with the field needs.

Field Research – Movelaria Paulista

The MP’s formation process began in 2004, in a context of increasing market competitiveness in São Paulo’s furniture sector, which was facing strong competition from Southern industries. During interviews, the entrepreneurs explained that MP was constituted in an increasing competitive market context, outdated technology and lack of market information. These conditions increased their desire to constitute a differentiated group. The respondents addressed not only the time of this constitution, but also rescued the story of their own business; enriching the interviews and contextualizing the MP's importance in their organizational lives (see figure2). To present the results of a study using GT without going into technical details (which is fully explored in Sakamoto, 2011) of how the substantive theory was built, which may seem at first glance like a complex puzzle, and at same time to be able to highlight the process, we follow the recommendation of Goulding (1999): “the paper or thesis should be written in a way that allows the reader to identify key stages in the research and highlight conceptual development ... they demonstrate the process of telling the story of building theory using this method.”. In this section we present the synthesis of what
the MP’s case revealed (propositions), followed by the story of how its collaboration dynamics was built.

The research revealed a group of companies with a strong desire to make a difference for its members and the society around them. Three aspects dominated: the role of MP in the respondents’ organization story; the existence of common values; and, demands for change, derived from the difficulties faced by some initiatives (projects). The MP’s formation stage was marked by a desire to create a centre for information exchange and share best practices, leading to projects that brought tangible results for the group and reinforcing the importance of the association. During the formation stage, behavioural trainings were provided by SEBRAE, which were tailored to MP (focus on associativism and entrepreneurship). They worked as a knowledge source required aligning the different experiences and values which enabled the MP constitution. The concept of collaboration dynamics represents the inter-relationship that occurs among MP’s members, from the individual or collective's goals a set of experiences are accessed and have promoted actions. The lack of experience in dealing with some subjects suggests that new knowledge must be acquired and what ways to address and forward the issues should be discussed in the group, in order to promote a common understanding and directing. The behavioural training was considered by respondents as the landmark that has provided the knowledge needed to enable the group’s wish: build a differentiated LPA. It served as a catalyst that changed the attitude and the way of members’ behave, as in interviewee testimonial:

"First, we did the behavioural training ... it was the most important thing! The furniture business was not mentioned, it’s spoken only about behaviour ... I changed my vision, I do not see other factories as adversaries, much less as enemies, I see in them possible partners (E6:145 – means: Entrepreneur #6: line:145)".

In this context, they had the desire and the experience; they knew what not wanted and what had gone wrong. The training provided the knowledge required to underpin the development of the MP. It helped entrepreneurs to start a set of initiatives, which were conducted in order to build a differentiated LPA. Thus, relationships were developed and solidified. As the mutual trust increased the greater the relationships’ relevance for the group, becoming a valuable asset. The isolation and lack of information now were no longer part of the MP’s daily business.

**Prop 1:** Action aimed to collective improvement (network, industry or society) increases the gain awareness, facilitates the inclusion and integration of new members and strengthens the group.

In the consolidation period, the group have faced two challenges: to expand its knowledge and experiences base and to hold common values and directions, by creating mechanisms that
encourage the issues discussion and addressing them as soon as they arise. However, over time more complex projects appeared, the market created new demands and the interviewees cited managerial or technical issues to explain their poor performance, below expectations, generating in the group the need to resolve them, post-consolidation stage (see figure 2). Moreover, the current macroeconomic context has required full attention of small businessman, who demonstrates a high dependence on market conditions. The story of these furniture companies is full of ups and downs, which had required entrepreneurs’ versatility and adaptability to deal with market volatilities. See what was said by one of entrepreneurs:

“... in last September (2008) the crisis hit me, I sent e-mail asking for help ... I do not know, I remember that I did with Jean, the “Livraria da Vila” bookshop, it gave me work for a month and then I work jointly in another big ...it saved me...” (E6:178).

If the market goes into recession, MP’s member focus is on its own business; its attention turns 100% to the company’s issues. Then there is a dilemma: focus on own business vs. MP, delegate management vs. Institutions’ lack of managerial skills. One of MP project, the "Movelaria Solidarity", despite its complexity and social orientation mobilized the whole group and it was successfully completed. Nonetheless, there are projects such as purchasing central which did not take off. Both projects were relevant to the group, the second even more attractive, because the objective was collective buying, generating internal savings for all members and increasing their power of bargain.

Prop 2: Initiatives and unselfish actions, aimed at the collective, as social projects awaken the collective consciousness, producing direct (maturity) and indirect gains, such as attracting new partners, creating new opportunities.

We named their concerns as issues which were grouped by nature into three categories: technical, managerial and institutional. The technical issues are associated with the need to increase product quality and production process’s efficiency, increasing the MP’s competitiveness as a whole. The issues of a managerial nature are linked to ways of maintaining group’s involvement and their cohesion. Concerning to the institution’s issues, they are related to set required skills, boundaries, roles and responsibilities. The way issues are conducted by MP is directly related to the different entrepreneur profiles existing within the group. This profile adds the defence of MP’s issues along class entities and simultaneously promotes their integration and besides has access to privileged information. However, they have the need to be close to power, creating difficulties in promoting greater participation and rotation in coordination roles and have difficulty to impose limits and charge the institutions responsibilities.

The MP current phase, we called post-consolidation, which started with planning meetings in set-out/2010 for the biennium 2011-2012 was attended by thirty entrepreneurs, in which five new members were presented and exposed their expectations, the old members were heard and a balance of previous projects was made: the interaction was the focus of the meeting. The projects prioritized have an explicit focus on desire for innovation. They were conscious that the projects should be conducted by subgroups, with mechanisms to promote interaction and communication among groups. Another theme debated was how to turn MP into something more interactive, where knowledge can also be fluidly disseminated and shared. Given the difficulty in resolving certain issues in some of the projects, the group was willing to act in a more dynamic way, not only between companies and their partners, but also approaching other networks to seek solutions and knowledge. This period began with: 1) awareness of the existence of different levels of maturity among members; 2) the need to delegate the project management, so different entrepreneurs can exercise leadership role; 3)
emphasis on exchange knowledge, and 4) developing agents, building bridges and relationships with different actors and networks outside the MP.

Prop 3: The diversity of company’s maturity level in MP affects its inclusion and integration in the group, requiring differentiated competencies and skills in network leadership.

In December 2013, the group of 52 companies was reduced to 38, they mentioned that they have struggled with the new members inclusion, due to the variety of companies’ maturity and the leadership in MP. Anyway, the scenario presented instigates the desire to continue the research. The major challenges were launched! In summary there is at MP a pro collective guidance in their actions, whether to governance issues such as prioritization and project guidance, reflected in the way they seek for solutions.

Substantive Theory and current Theoretical Mainstream

The figure 3 help us to present the substantive theory developed throughout this research project, rescuing categories and making explicit the link among its elements and summarizing the contributions of this research. The MP transforming environment are composed by the integration/inclusion abilities, pro collective orientation and perceived gains elements, which are the core that makes the innovation dynamics happens in the network (C). The pro collective orientation encourages interaction among members who use collaboration as a mechanism to address the issues (D); the mutual caring and group success (projects implementation or issues’ solutions) increase the perceived gains and confirm the relationships relevance (B). The earning perception contributes positively to the members integration, whose experiences (E) in the network and past projects (A) contribute to results and generate new demands for differentiated leadership, increasing business maturity (F), attracting new partners and generating gains for society.

Figure 3 – Substantive Theory and Categories Summary (Source: Authors)

The MP substantive theory exposes a growing and dynamic spiral: EXPERIENCE and PROJECT make use of PRO COLLECTIVE GUIDANCE that increases the GAIN PERCEPTION which facilitates INCLUSION and INTEGRATION in the network. The results collaborate to increase the business MATURITY and adds values to SOCIETY, attracting NEW PARTNERS whose generate and contribute with EXPERIENCE and new expertise to the project execution, and so on ... Therefore innovation at MP is positively influenced by the transforming environment associated with the MP group experiences generates direct (maturity, innovations) and indirect (society) results and as well as attracts new partners.
The analysis of MP’s collaboration dynamics theory, by promoting a reencounter with current theoretical mainstream, leads us to the studies of: innovation, collaborative networks and economic sociology. When the MP’s initiatives are analyzed taking the concept of innovation stated by OECD (2005) and have their nature assessed based on Benner and Tushman’s (2003) classification, exploratory (new) or exploited (improvement). We find that the ones in MP are mostly exploitation and little has been done in terms exploration. This study contributes to this perspective, adding value through their formation history and how this network has addressed their issues to facilitate innovations (projects). This understanding enables MP to take action in order to increase its capability to establish new relationships, identify opportunities and take advantage of them, considered essential to foster innovation (Tidd, Bessant and Pavitt, 2005).

The network theory explains the MP’s initial formation process where the interlacing of social initiatives was articulated around common purpose, enabling the MP. The collaborative networks are based on informal movements that are self-working towards a common goal (Cowan, Jonard and Zimmermann, 2007; Inpken and Tsang, 2005; Gulati, Nohria and Zaheer, 2000). It is relevant to remember that the networks are linked to social capital, which has as a central proposition that network relationships are a source of valuable resources for the individual and the organization. As confidence grows, it will also compose and improve social capital, one of its benefits is the access to the information and to the preferential flow of knowledge between them. Inpken and Tsang (2005) investigated how the knowledge transfer occurs in different types of network and observed that three dimensions of social capital directly affects this transfer among its members: Structural, reinforcing network links, configuration and stability; Cognitive, by establishing common goals and building a shared culture; and Relational, strengthening the commitment and trust among members. Some researchers argue that this continuous process of construction should be adjusted to the organization’s strategy, which is best conducted in an environment where there are diversities, is more organic and less formal (Hatchuel, Lemasson and Weil, 2006; Farjoun, 2002; Weick, 1995). In the current market context, organizations are increasingly seeking for strategic partnerships, fostered by complex internal and external networks, in order to produce innovations and generate value for their members. Indeed, the goal is to have a social capital to produce knowledge and actions (Singh and Mitchell, 2005; Gulati, Nohria and Zaheer, 2000; Nonaka and Takeuchi, 2004), which is exactly what MP have been searching for. In addition this substantive theory contributes to this field, providing an example of how a network of small businesses was formed and explaining how their relationships have been developing and the challenges that have arisen along its trajectory.

MP’s base of knowledge and experiences seem to have reached a plateau and thus begin a level of stagnation, at this point economic sociology theory can help us to combine and expand the substantive theory. According to Granovetter (2005), the basic principles that guide economic results for social networking are: network’s norms and density, which includes shared ideas about conduct and accepted behaviours; the strength of weak ties leads to knowledge expansion; relevance of structural holes, what matters is not the quality of ties but what kind of knowledge is connected; and, the social embeddedness, where economic and non-economic activities are inter-mixed, and economic activities will not affect costs and techniques available for their implementation. At the moment you accept to put management science within the economic thought, economic sociology is very close to the organizational action science as proposed by Hatchuel (2001). Hence it allows the reflection on collective action, contributing to the understanding of MP and suggesting new actions that increase the weak ties and ways to address the structural holes, as ways to broaden the base of knowledge and experience to address their issues internal.
Final Considerations and Directions for Future Research

The substantive theory has not the intention to any statistical generalization of results. The target generalization of this type of research lies in theoretical terms, to the extent that the variability of the phenomenon is considered in its propositions. In the MP case the procedural studies cover only six years, so it can be argued that it does not allow a considerable variation in the external and internal network environment, suggesting that further case studies need to be conducted to increase its explanatory power. Even though the substantive theory is flexible and allows changes as new variations of the phenomenon are identified by new cases studies, they should not deny the previous theory; instead of they should improve the current categories and develop new theories.

Another point of concern is the nature of propositions. We do not have any pretension to isolate variables to discern cause-effect relations. The research design and ex post characteristics would not allow such procedure. In fact, the propositions must be understood as co-relationship between contexts and observed behaviours. The elements of this substantive theory can be extrapolated and exploited in other networks because there are many different combinations that enable the construction of several hypotheses that can be tested. For instance, a network to innovate requires diversity; to produce results need to identify synergies (by inclusion and integration) and a differentiated network’s leadership skills and competencies.

These results were compared with the literature in the last section. After analysis, we have ratified that there is no single current theory that explains how the collaboration dynamics has affected the result of innovations in the MP. The substantive theory explains how the previous experiences and the common values favoured their innovation deployment, as well as lack of knowledge and experiences that enable solutions to internal issues are affecting negatively the results of innovations. With respect to convergent points, building trust and relationships are remarkable aspects in the MP's history as well as the importance of increase weak ties and uncover structural holes to expand the base of knowledge and experiences.

One aspect not explored in this article was to look at the substantive theory under the lens of social entrepreneurship, as throughout the MP's data analysis there is a concern with their role within the industry sector and society. There is evidence that this is glue between their members, but requires a deeper analysis (explore maturity and leadership categories).

This research provides support for MP members expand the understanding of how their collaboration dynamics works. This can facilitate the search for solutions to improve their performance. Partners, as SEBRAE can review their roles, acting as agents that help expand the knowledge base and bridging ties to different networks and facilitating the integration of new members to the MP. SEBRAE can use this study to explore and evaluate other SME’s network context and partnership with research centres may allow monitoring and tracking the evolution of these networks, so a longitudinal study can be designed in a broader scope and comprehensiveness.

References


