RESILIENCE AND COLLABORATIONS
AT THE BASE OF THE PYRAMID

Marijane Luistro Jonsson

Stockholm School of Economics
Holländargatan 32, Box 6501, SE-11383 Stockholm, Sweden
marijane.jonsson@hhs.se, +46 705786595

Abstract
Collaborations have been treated as the Holy Grail of sustainable solutions, regarded as a vehicle to either address social issues, transfer knowledge, legitimize institutions, and lately, to foster resilience in communities. Through exposing the complexities of collaborations in general, and the multidimensionality of resiliency and networks in particular, this paper argues that collaborations should not be taken as a panacea in the name of sustainable development. A theoretical framework linking the structural and relational dimensions of a collaboration network to the magnitude of change that it can absorb, capacity to self-organize, and ability to learn and adapt, produced six hypotheses depicting how the different facets of collaboration will have different implications on the ability of the social network to resiliently cope with a disturbance. The conceptual model shows that collaboration is a double-edge sword, wherein it’s relational and structural dimensions can both foster and hinder resilience. An application to the base-of-the-pyramid (BoP) market is discussed and the paper concludes with implications for scholarship and practice.

Keywords
Resilience, Collaborations, Networks, Base-of-the-Pyramid
1. Introduction

In the recent years, there has been an increased interest in collaborative ventures among different stakeholders in the pursuit of sustainable development. This is evident in the examples of business models operating at the base-of-the-pyramid (BoP), which aims to earn profit while alleviating poverty through targeting the 4 billion people living on less than $2/day (Prahalad and Hart, 2002). A common strategy adhered at the BoP is to collaborate with stakeholders in various sectors like multinational corporations (MNCs), non-government agencies (NGOs), governments and local communities (e.g. UNDP, 2008). By doing so, cross sector collaborations mediates the shifting roles, changing relationships and perceived responsibilities of the public, private and civil sectors, and have been widely adopted as a vehicle for corporations and communities to work together to address social issues and maximize their goals (Googins and Rochlin, 2000).

Other possible factors contributing to the increasing growth of cross-sector collaborations are globalization; encouragement among governments, international organizations and civil society themselves; and a realization that actors from different sectors should solve contemporary problems (Hütte, 2008). Regulatory factors (e.g. deregulation and liberalization), changes in the business and economic environment (e.g. standardization), and changes in industry practice and strategy (e.g. outsourcing) have also contributed to the growth of collaborations, aiding in the transition towards a knowledge-based economy (Contractor and Lorange, 2002). When the knowledge base of an industry is both complex and expanding, and the sources of expertise is widely dispersed, the locus of innovation are often found in the networks of learning, rather than individual firms (Powell et al, 1996). Thus, collaborations are also seen as a vehicle for transferring knowledge and technology in the increasing complex and interdependent world we live in.

In addition to viewing cross-sector collaborations as vehicles for social development, knowledge transfer, and legitimizing institutions, they are also considered as a vehicle for building resiliency among communities (e.g. Heuer, 2010; Berkes, Colding and Folke, 2003; Ostrom, 1990; Adger, 2003). Adaptive collaborations encourage structures and relations that can foster resilience in communities. Given this, it is to no surprise that cross sector collaborations are regarded as the Holy Grail of solutions, perpetuated in the name of sustainable development. This paper, however, argues that cross-sector collaborations should neither be taken as a panacea nor a quick solution that can be easily scaled-up. An
understanding of the complexities and multi-dimensionality surrounding it is necessary because constant collaboration failures add to fragility of the situation. This is all the more relevant in an age of increasing disturbances and decreasing resources, marked with a surge of natural calamities, political disturbances and economic crises. As Rockström et al (2009) argue, human activities have pushed the systems of the planet outside stable environmental states that maintain conditions enabling human development. Therefore, there is a need to understand the complexities of the system to guide future actions because the road to sustainable development is not a straight-forward one as it is often depicted to be.

An overview of the intricacies of collaboration and resiliency, and an integration of a resiliency perspective to management literature are the contributions that this paper intends to impart. A resilience perspective is increasingly used as an approach for understanding the dynamics of social-ecological systems, of which collaborations and social networks are a part of (Folke, 2006). The next section gives a background of the BoP, followed by a review of the literature on resilience, cross-sector collaboration, and network theory. This paper aims to develop a theoretical framework linking the concepts, in particular, the dimensions of social networks and the dimensions of resiliency. Hypotheses are derived and then applied to the case of the BoP. The paper concludes with the caveats of the study, suggestions for future studies, and implications to practice. The level of analysis entails collaboration between different sectors at the network level.

2. Literature Review

2.1 The BoP Market

As the worlds of business and development merge, so do the boundaries between them become more blurred. Companies are getting more engaged in social and environmental concerns while development agendas encourage market inclusion and participation. Their common goal is to one way or another contribute to poverty alleviation, environmental improvement and sustainable development. Among others, this merging phenomenon has been covered in the management literature by the Base-of-the-Pyramid (BoP) concept and discourse.

The BoP concept has its origin in the works of Hart and Prahalad (2002), arguing that there is a fortune to be made at the BoP or the 4 billion people living on less than $2 per day.
Their hypothesis created various debates and resulted to numerous studies, both among academicians and practitioners. On one hand, succeeding studies have supported and further built on the concept as far as having a BoP Protocol or a set of business tools and practices guiding multinational companies in entering the BoP market (e.g. Prahalad, 2004; Hart, 2005; Simanis and Hart, 2008). On the other hand, there are critical studies against its assumptions and impacts, focus on consumption, over-confidence on market forces, etc. (e.g. Karnani, 2006, 2008 and 2010; Murphy, 2008). Karnani (2008) argues that market solutions for poverty oftentimes romanticize the poor as creative entrepreneurs and discerning consumers. This portrayal is not always the case and can be dangerous as it overlooks the vulnerability of the poor, thus there is a need for more government responsibility. Other branches of study investigate innovation (e.g. Christensen and Hart, 2002; Christensen, et al., 2006; Kandachar and Halme, 2008) and strategy at the BoP (e.g. London and Hart, 2004 and 2005; Porter and Kramer, 2006). Alternatively, Arora and Romijn (2009) classify the BoP discourse into BoP1 and BoP2. BoP 1 refers to the first wave of literature that is largely top-down and places heavy emphasis on deriving profits from selling to the poor while the more recent wave of literature or BoP 2 is based on bottom-up business co-venturing. The former view has been criticized to be disembedded from broader societal values and natural environment, focusing solely on latent consumer needs, thus, the latter view shifted to fostering and nurturing local economic potentials of communities.

BoP studies are not only authored by academic scholars. Practitioners in development agencies, consulting firms and international think-tanks have also been engaged in BoP research (e.g. UNDP, 2008; World Economic Forum, 2009; World Resource Institute, 2007; World Business Council for Sustainable Development, 2004; Lenstra and Wälzholz -KPMG, 2008; Karamchandani, et al. – Monitor Group, 2009). Their focus is mostly on the different business models and how they can be replicated and scaled up. Research alliances between practitioners and academicians, like the so-called BoP learning labs in different parts of the world, have also emerged as a result of the resources and attention the BoP has been receiving. In the literature, there are other terms used like inclusive markets, emerging market models, untapped markets, and the like that refer to the BoP.

Amidst all these studies, one theme that interests BoP scholars and practitioners is value creation among the different business models, and a repeating strategy that emerges is collaboration. For instance, the study “Creating Value for All: Strategies of Doing Business
with the Poor” (UNDP, 2008) looked into 50 business cases that have included the poor and identified the value-creating strategies that were used. The strategy that was commonly adapted was to combine resources and capabilities with others. Thus, it is to no doubt that multi-sectoral collaboration at the BoP is indeed happening, but what is more interesting for this paper is to find out if they foster resiliency by being resilient themselves.

2.2 Taking a Resilience Perspective

The BoP market is often sweepingly characterized to be either resilient or vulnerable. While Prahalad describes the “poor as resilient and creative entrepreneurs and value-conscious and rational consumers” (Prahalad, 2004, p. 1), Karnani argues that the “poor are vulnerable and not value-conscious consumers” (Karnani, 2008, p. 50). But what does it really mean to be resilient? In general, resiliency refers to the ability to cope with disturbances. Among others, the term is used in psychology (i.e. recovery of individuals from traumas and stress), physics (i.e. property of materials to absorb energy) and ecology (i.e. behavior of ecosystems in response to disturbances and perturbations). This paper takes the view of socio-ecological resilience because it offers a perspective that studies change in long-term social relationships, specifically those that underlie collaborative schemes (Nkhatà, Breen and Freimund, 2008). The resiliency approach gives a perspective that emphasizes non-linear dynamics, thresholds, uncertainty and surprise, how periods of gradual change interplay with periods of rapid change, and how such dynamics interplay across temporal and spatial scales (Folke, 2006). In the current management literature, resilience studies are often associated with managing risks and adapting to the consequences of natural disasters and terrorism (e.g. Starr et al., 2003; Branzei and Abdelnour, 2010). There are also studies looking not directly on resilience but on change and complex adaptive systems from the perspective of organizations (e.g. Anderson, 1999; Brown and Eisendardt, 1997). The link however between collaboration and resilience in management literature appears to be understudied. A brief discussion of the resilience concept is given below to shed light on the basic viewpoints of this perspective.

Holling (1973) originally defines resilience as a measure of the ability of systems to absorb changes of state variables, driving variables, and parameters, and still persist – it determines the persistence of relationships. It is not the same as stability, which is the ability of a system to return to equilibrium state after a temporary disturbance (i.e. the more rapidly it returns with least fluctuation, the stable it is). Both resilience and stability are properties of a
system, but persistence or extinction is the result of resilience while degree of fluctuation around specific states is the result of stability.

Holling’s adaptive cycle model in Figure 1 gives us a better understanding the concept of resilience. The cycle consists of the phases of exploitation, conservation, release, and reorganization. The front loop is a slow, incremental phase of growth and accumulation (exploitation and conservation phases) which eventually leads to a climax, inviting disturbances and surprises, and results to a release of accumulated capital and opportunities (i.e. creative destruction). The back-loop is the rapid phase of reorganization leading to renewal, where novelty and innovation can occur. The system is influenced by the innate potential among accumulated resources and structures (i.e. high potential, passive capital or low potential, active capital) and the degree of connection among the controlling variables (i.e. weak connectedness, diversity or strong connectedness, sameness). An exit stage can occur when capital leaks away, resulting to a shift in to a less productive and organized system.

![Figure 1: Adaptive Cycle (Source: Resilience Alliance)](image)

Nkhata, Breen and Freimund (2008) note that Holling’s model can be applied to long-term social relationships because it meets the two conditions which makes it applicable to systems other than the ecosystems: that the systems are describable in dynamic terms, and that they have the potential to move into multiple states. They view long-term social relationships to consist of a series of relational changes, both for periods of stability and instability, and suggest that the potential for change is largely mediated by the amount of relational capital (i.e. trust and commitment as the two key attributes) and degree of relational connectedness (i.e. degree to which actors are linked and the strength of links that mediate change in social relationships). These two variables represent the extent of change that a collaborative scheme would have to experience before its underlying relationships

---

The 14th European Roundtable on Sustainable Production and Consumption (ERSCP)
The 6th Environmental Management for Sustainable Universities (EMSU)
move into different states, and these variables also generate multiple states for relationships through repeated interactions.

Adaptive cycles are nested in a hierarchy across scales, and **panarchy** is the term used to capture its dynamics illustrated in Figure 2. For instance, knowledge systems can consist of the scales of local knowledge, management institutions, and worldview (Folke et al, 2002); institutions consists of the scales of operational rules, collective choice rules and constitutional rules (Ostrom, 1990). Gunderson and Holling (2002) shows that there are revolt and remember connections between cycles across scales. Revolt connections cause critical change in one cycle to cascade up to a phase in a larger and slower one; remember connections facilitate renewal and reorganization by drawing on the memory that has been accumulated and stored in a larger and slower cycle. Thus, panarchy explains how it is possible, for brief moments, to generate novel re-combinations that are tested during longer periods of capital accumulation and storage. These windows of experimentation open briefly, but the results do not trigger cascading instabilities to the whole system because of the stabilizing nature of nested hierarchies. In essence, larger and slower components of the hierarchy provide the memory of the past and of the distant, to allow the recovery of smaller and faster adaptive cycles.

![Figure 2: Panarchy (Source: Resilience Alliance)](image)

Collaborations are nested in the larger society and environment of which it is a part of. Seitandani (2008) describes cross-sector social partnerships to be embedded in the macro, meso and micro levels of realities, and thus, should take multi-dimensional responsibilities. They represent the potential of a flexible, non-regulated network structure that can address a broad range of important social issues (macro-level) by functioning as change mechanisms; facilitate social innovation through organizational interactions (meso-level); and through the decisions of the individual (micro-level) by operating bridge across sector boundaries.
Collaboration processes go through similar front and back loops, and this paper investigates the dimensions involved in the latter. The Resilience Alliance identifies three defining characteristics of resilience (Folke et al, 2002), namely:

- the magnitude of shock that the system can absorb and remain within a given state
- the degree to which the system is capable of self-organization
- the degree to which the system can build capacity for learning and adaptation

Thus, resiliency is not a static characteristic but a combination of various dynamic capabilities which takes time to develop - to absorb change, to self-organize, to learn and adapt. The perspective focuses on the back-loop process of destruction and reorganization, which is often neglected in favor of the dominant linear world-view of exploitation/growth and conservation.

### 2.3 Understanding Cross-Sector Collaborations and Networks

Collaboration is an elusive concept that has been extensively studied in different disciplines such as public administration, education, health, natural sciences, economics, psychology, sociology, and business. In the management literature, collaboration has many names associated with it such as alliances (Contractor and Lorange, 2002; Das and Teng, 2000), joint ventures (Madhok, 1995), partnerships (Waddock, 1991), inter-organizational relationships (Cousins, 2001; Ring and Van de Ven, 1994), and networks (Ahuja, 2000; Gulati, Nohria and Zaheer, 2000). They emerge from the theoretical platforms of resource dependence (Lavie, 2006), transaction cost, institutionalization (Heuer, 2010), knowledge (Powell, et al, 1996), stakeholder, (Wheeler et al. 2003), and networks (Håkansson and Snehota, 1995). This study explores the network literature to link the dimensions of collaboration to resiliency.

Network studies have escalated in the past years, covering concepts such as social capital, embeddedness, network organizations and organizational networks, board interlocks, joint ventures and firm alliances, knowledge management, social cognition, and group processes (Borgatti and Foster, 2003). Network studies covering industrial marketing and purchasing (IMP Group 1982; Håkansson and Johanson, 1992; Mattson, 2004) have often extended the perspective in describing markets as networks of relationships, structures, processes and positions that transform over time, merge, and shift in focus and membership (Easton, 1992).
Håkansson and Johanson (1992) view industrial networks to consist of the substance of the relationship (resources, actors and activities) and its function (single actor, dyad, network). Håkansson and Snehota (2000) identify the cornerstones in the network perspectives to include content (i.e. technical, social and economic), embeddedness, complementarities, and confrontations between different knowledge resources.

Regardless of the term and theoretical approach, the extant literature has predominantly focused on collaborations within and between organizations, and has focused on the linear process of understanding the structure, underlying mechanisms and managing the stability of the collaboration. Provan, Fish and Sydow (2007) differentiates network studies into those that are “egocentric” or in the organizational-level of analysis and the “whole network” or inter-organizational level of analysis. The former would entail studies looking into the dyadic interactions between organizations, positioning of organizations, as well as impact of individual organization on the network and vice-versa. The latter focuses on network-level interactions.

Research on cross-sector collaborations in management journals have also increased in the past years. Most studies view the process as a linear process that leads to value-creation. For instance, there is a collaboration continuum consisting of philanthropic, transactional, and integration stages (Austin, 2000); as well as progression of arms length relationships, interactive collaborations, and intensive environmental management alliances (Rondinelli and London, 2003). Selsky and Parker (2005) group the cross-sector studies into the following arenas: business-nonprofit partnerships, government-business partnerships, government-nonprofit partnerships, and the trisector partnerships. Trisector studies emphasizes the effects of multiple and complex interdependencies involving many stakeholders.

Cross sector collaboration studies are quite related to “whole network” studies, in the sense that both aims to understand the mechanisms underlying the connections and linkages of a group of actors working towards a common goal. Bryson et al (2006) define cross-sector collaboration as the linking or sharing of information, resources, activities and capabilities by organizations in two or more sectors to achieve jointly an outcome that could not be achieved by organizations in one sector separately. Similarly, Provan, Fish and Sydow (2007) define whole networks as a group of three or more organizations connected in ways that facilitate achievement of a common goal, arguing that although networks can form
serendipitously, most of the empirical studies focus on those that are formally established and governed with goals. Thus, in the jungle of literature, cross-sector collaboration research can gain from networks studies and vice-versa because both investigate the same phenomena.

3. Theoretical Framework: Linking the dimensions

Nkhata, Breen and Freimund (2008) propose a conceptual framework combining resilience theory (Holling, 1973) and relationships theory (Cousins, 2001) to analyze the evolution of collaborative schemes. They postulate that long-term relationships in collaborations consist of the different types of inter-organizational relationships and follow the same pattern as the phases of the adaptive cycle, having a tendency of moving from an opportunistic state (growth/exploitation) through collaborative (conservation) and adversarial (release) states into a tactical (reorganization) phase. As figure 3 shows, the opportunistic state represents a phase during which new opportunities for collaboration are rapidly engaged; the collaborative state represents a phase of slow accumulation of relational capital expands and relational capital is consolidated; adversarial state represents strong connectedness but the capacity for change is low because of the complexity of expanded connectedness and a growth in adversarial behavior; tactical phase represents that the capacity for change is high due to the re-strengthened relational capital but connectedness is low as it is regaining focus. Reorganization may result in opportunism once again, triggering the system into another adaptive cycle or may lead to a shift into a new configuration of less or more cooperative behavior. Thus, long-term relationships vary as behaviors evolve over time, changing into different states, shaping the nature of collaborative arrangements.

![Figure 3: Framework for analyzing change in long-term social relationships](Source: Nkhata, Breen and Freimund, 2008)
As mentioned earlier, Nkhata, Breen and Freimund (2008) identified the variables of relational capital and relational connectedness. Relational capital refers to attributes such as trust and commitment, and is often treated in the literature as social capital. On the other hand, relational refers to the links of the actors in relationships, and this can be seen through the dimensions of bonds, activities and resources in the markets-as-networks theory (Håkanson and Johanson, 1992). The bonds denote the various ways in which actors perceive and respond to each other socially and professionally; the activities refer to the connections affecting choices about how to share activities; and the resource ties show how resources of actors are tied together and how such ties evolve as actors exchange and access each other’s resources. Given these dimensions of connectedness, a structure is implied and emerges amidst the web of relations. Thus, building on their study, the identified dimensions of collaboration that will be explored are structural (i.e. as a result of the connectedness) and relational (i.e. social capital involved) dimensions.

3.1 Structural Dimension

Studies on network structures have mostly focused on the closeness or openness of the collaborative relationships, measuring its density, centrality and structural holes (Provan, Fish and Sydow, 2007; Ahuja, 2000; Walker, Kogut and Shan, 1997; Rivera-Santos and Rufin, 2010). In general, structure refers to the network’s density (i.e. overall level of connectedness among organizations), centralization (i.e. extent one or a few organizations are more centrally connected than others), boundaries (i.e. scope, tie domains and size), fragmentation (i.e. broken into fragments of unconnected organizations, dyads and cliques) and structural holes (i.e. ties that bridge unconnected sections of the network). Thus, structure has several dimensions in itself.

On one hand, closed or tight networks, which are characterized to be dense, interconnected, highly embedded, and composed of members with many interlocking and redundant ties, are considered to be the optimal structure because it facilitates the development of trust and cooperation (Coleman, 1988). Moreover, centralization facilitates integration and coordination in a network (Provan and Milward, 1995). On the other hand, open or loose networks, characterized by multiple disconnected clusters are considered to be more favorable because the connections can be used to provide information benefits and control advantages. There can be entrepreneurial opportunities in exploiting structural holes between dense pockets of networks, and brokering non-redundant relationships brings in
new information and the possibility of negotiating between competing groups (Burt, 1992). Ahuja (2000) nonetheless argue that there is no universal answer - the form taken should be contingent on what actors seek to enable it through. Walker, Kogut and Shan (1997) maintain that Burt’s structural holes theory, which raises the issue of free riding, might apply more to networks of market transactions than networks of cooperative relationships. It is the latter that relates more to collaborations during the back loop, or in times of great disturbance and uncertainty.

Therefore, this paper suggests that in times of big disturbances, networks characterized by high density and high centrality will be able to absorb more change because it will be able to coordinate and integrate the changes faster and efficiently. Loosely coupled networks, though having more access to information and control, will only be able to absorb meager magnitude of change compared to tight systems due to lack of coordination and integration.

*Hypothesis 1a: The more dense and centralized the network, the greater the magnitude of change a network can absorb after undergoing a disturbance.*

Others regard governance as an attribute of structure. Collaboration involves creating structures that enables participants to jointly make decisions about rules that will govern their behavior and relationships (Thomson et al, 2009). Folke (2006) argue that adaptive governance relies on the collaboration of a diverse set of stakeholders operating at different social and economic scales in multilevel institutions and organizations. Thus, the more diverse the members of a network, the easier it is to reorganize because of the availability of varied skills and access to resources (e.g. information and knowledge exchange). In closed networks, there is a tendency for members to be homogenized due to isomorphism. Thus, this paper argue that compared to open networks, closed networks characterized by the similarity of its members, have less capability to re-organize and govern itself after a disturbance due to the lack of diversity among its members.

*Hypothesis 1b: The more similar the members of the network, the less it is capable of self organization after undergoing a disturbance.*

Centralized systems and the capacity to absorb and replicate new knowledge can be viewed in two ways. On one hand, centralized systems are seen to limit the information flow, thus posing a barrier to learning and innovation. Powell et al (1996) highlight the liability of
unconnectedness, wherein if the locus of innovation is found in a network, access to that network proves to be critical. A network serves as a locus of innovation because it provides timely access to knowledge and resources that are otherwise unavailable while testing internal expertise and learning capabilities, but it is harder to penetrate deeply embedded networks, and conversely, it is harder for them to be open to new learning.

On the other hand, other studies show that centralized networks, due to their more coordinated structure, innovate more because of their larger absorptive capacity, defined by Cohen and Levinthal (1990) as the ability recognize the value of new information, assimilate it and apply it to commercial ends. For instance, Ahuja (2000) supports the notion of strong ties contributing to innovation by showing that direct ties, indirect ties and structural holes have positive impacts to innovation, with the impact of indirect ties moderated by the number of direct ties.

Zahra and George (2002) distinguish between the potential and realized absorptive capacity, and its dimensions of acquisition, assimilation, transformation and exploitation. Gupta and Govindajaran (2000) point out that absorptive capacity among organizations differ depending on the extent of prior related knowledge (i.e. shapes the filters in differentiating what is relevant and valuable information), and the extent of homophily or similarity of attributes of the receiving unit (i.e. communication of new ideas have greater effects on behavior, attitude and knowledge when there is shared common meanings and mutual subcultural language). Therefore, there is a path dependent cycle of learning in which the early choice of exploration elicit positive feedback, thus, viewing the development of absorptive capacity, skills at managing in collaborations, and increased awareness of new projects and reputation as serendipitous benefits of collaboration.

This paper suggests that the latter view of centrality, density, and absorptive capacity increasing innovation holds true during stable times and small changes. However, during periods of big disturbances, the high centrality and density in networks would lead to a low capacity to learn and adapt because of lack of access to new information. Moreover, the resulting homophily prohibits recognition and assimilation of new solutions and valuable information. Therefore, compared to loose networks, tight networks characterized by high centrality and density would have a low capacity to learn and adapt after a disturbance due to low absorptive capacity, or non-recognition and non-assimilation of new information.
**Hypothesis 1c:** The more dense and centralized the network, the less capacity it has to learn and adapt after undergoing a disturbance.

In summary, the hypotheses presented reveals that the structural dimensions have varying implications to resiliency. Tight systems that have high density and centrality allow the network to absorb greater magnitude of change during periods of disturbances. However, although they can absorb higher magnitude of change, their capacity to self-organize, learn and adapt is lower compared to loose systems. This is due to their lack of diversity in membership and increasing homogeneity, which curtails its ability for self-organization, recognition and assimilation of new information.

### 3.2 Relational Dimensions

The relational dimensions refer to the substance of the structure - or the relations, connections and ties that flow through them. These relations are often taken into account as the interplay of the norms of reciprocity, trust and reputation (Ostrom, 1990); embeddedness (Granovetter, 1985; Uzzi, 1997); reputation and legitimacy (Owen-Smith and Powell, 2004); trust and commitment (Nkhata, Breen and Freimund, 2008); and trust, goal congruence and resource interdependence (e.g. Das and Teng, 2001; Gulati, 1995; Ring, 1996). Trust and tie relations are often bulked into the term *social capital*, which is defined in the management literature to consist of shared vision, social interaction ties, trust and trustworthiness (Nahapiet and Ghoshal, 1998; Tsai and Ghoshal, 1998). In sociology, social capital is defined as the aggregate of the actual or potential resources which are linked to possession of a durable network or more or less institutionalized relationships (Bourdieu, 1983). It is also viewed as the norms and networks that enable people to act collectively (Woolcock and Narayan, 2000), or the ability to obtain resources through networks and other structures through altruistic (bounded solidarity, value introjections) and instrumental (simple reciprocity, enforceable trust) sources (Portes and Landholdt, 2000).

The social capital literature distinguishes between the *bonding* and *bridging* ties that comprise it. Bonding ties would refer to strong bonds of trust and reciprocity in the network (e.g. based on kinship and friendship), while bridging ties would refer to weaker bonds of trust and reciprocity. As mentioned in the previous section, one stream of literature highlights the strength of weak ties (Granovetter, 1983, 1985; Burt, 1992; Uzzi, 1997). Actors can build relationships with multiple disconnected clusters and use these connections to obtain
information and control over others. On the other hand, other studies show that bonding linkages are the ones that matter during periods of disturbances. For instance, Adger (2003) shows that social capital is important in framing both public and private institutions of resource management that builds resilience. As trusting relationships develop inside a network, actors build up reputations of trustworthiness that may become important information for other actors in the network (Tsai and Ghoshal, 1998). The more trustworthy actor is more likely to be a popular exchange partner, especially during times of disturbances. Once again we are faced with the dilemma of the suitability of bonding versus bridging ties or the paradox of embeddedness.

As density tends to increase over time (Venkatraman and Lee, 2004), past relationships and ties contribute to creating embedded relationships, and past knowledge affects absorptive capacity. Uzzi (1997) argues that embeddedness can turn into a liability when there is no unforeseeable exit of a core network player; institutional forces rationalize markets or overembenchedness characterizes the market. If a firm becomes too embedded, network relationships become more tuned to partners, isomorphism within the network decreases diversity, and a concentrated level of exchange with only a few network partners reduces non-redundant information and access to new opportunities. High centralization limits the broad scope of activities to occur (Powell et al, 1996), as well as the emergence of cliques, sub-networks and clusters that can play important roles in the creation of positive outcomes (Provan and Sebastian, 1998).

This paper suggests that the more bonding ties a network has compared to its bridging ties during times of disturbance, the less difficult for the network to absorb change because of the high levels of trust, trustworthiness and reciprocity in the network.

Hypothesis 2a: The more bonding ties the network have, the more the magnitude of change a network can absorb after undergoing a disturbance.

Networks composed only of bonding links can impose constraining social norms and foster group homophily, reducing resilience (Newman and Dale, 2004). Diversity fosters adaptation to unexpected change, but most importantly enlarges the ability to proactively make collective decisions that optimize future options. Therefore, this paper suggests that the higher diversity in the network, resulting from having more bridging linkages, makes it easier for the network to self-organize after a disturbance.
Hypothesis 2b: The more bridging links the network have, the more it is capable of self organization after undergoing a disturbance.

Studies have shown that social capital results to value creation (Nahapeit and Goshal, 1998; Tsai and Goshal, 1998). Specifically, Johannisson and Olaisson (2008) argue that bonding social capital is more important and can be immediately put to use during times of crises. The collective tacit knowledge and entrepreneurial potentials emerge (e.g. Branzei and Abdelnour, 2010). Therefore, this paper predict that the more bonding links a network have, the more capacity it has to learn and adapt due to a collective reinforcement and positive feedback mechanisms resulting from the higher level of trust, and convergence of structures.

Hypothesis 2c: The more bonding links the network have, the more capacity it has to learn and adapt after undergoing a disturbance.

Similarly, the hypotheses presented above reveal that the relational dimensions of network have varying implications to resilience. Both bonding and bridging links are needed because they reinforce each other. Bonding links enable to network to absorb higher magnitude of change, as well as learn and adapt due to the high level of trust, reciprocity and reputation. Bridging links, on the other hand, brings in diversity and new information which aids self-organization. The bonding ties form the foundation from which bridging ties can be created, and bridging ties can strengthen bonding ties by providing new information and resources. In general, the importance of strong bonds during the back loop or in times of disturbances can not be neglected.

Table 1 shows a summary of the hypotheses presented in this paper. They show that the different facets of the networks will have different implications on the ability of the network to resiliently cope with a disturbance, or smoothly move from an adversarial to a tactical state. One can surmise the following insights, which suggests the importance of flexibility, diversity and openness to learning during times of disturbance:

- Networks that have a tight structure (i.e. high level of density, centrality) and high social capital (i.e. more bonding ties) will be able to absorb high magnitude of change.
- Networks increase their ability to self-organize when they have diversified membership, and many bridging ties.
Networks that are tight and homophilic are not susceptible for learning and adaptation because of the lack of diversified relations to gain new information and rigidities of a central governance. However, the strong bonding ties between the members may allow them to be open to learning, and is strengthened by positive feedback and collective reinforcement.

Table 1: A multi-dimensional framework of collaboration and resiliency

<table>
<thead>
<tr>
<th>Dimensions of Collaboration</th>
<th>Dimensions of Resiliency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magnitude of shock that the system can absorb and remain within a given state</td>
<td>Degree to which the system is capable of self-organization</td>
</tr>
<tr>
<td>Structural</td>
<td></td>
</tr>
<tr>
<td>High if the network is dense &amp; centralised (H1a)</td>
<td>Low if network membership similarity is high (H1b)</td>
</tr>
<tr>
<td>Relational</td>
<td></td>
</tr>
<tr>
<td>High if the network has many bonding ties (H2a)</td>
<td>High if the network has many bridging ties (H2b)</td>
</tr>
</tbody>
</table>

4. The case of the BoP network

An application of the theoretical framework to the meager studies characterizing BoP networks will not be able to merit compelling conclusions. Nevertheless, one can surmise that the BoP market exhibits network characteristics that make it both appear to be resilient and vulnerable in the event of a crisis or disturbance. Building on the study of Rivera-Santos and Rufin (2010), the characteristics of the BoP market can be grouped into the network dimensions developed in the previous section, as follows:

Structural Dimensions
- decentralized and non-linear due to importance of non-market members
- high density in isolated clusters but few connections between clusters
- many structural holes since specialized intermediaries are scarce
- Wide scope of boundaries due to lack of complimentors and prevalence of value chain gap
Multiple file domains because of institutional gaps and of the demands of diverse network members, such as NGOs or governments

- Small size of networks, centred around local communities
- Large member diversity because of the presence of many non-market actors due to a scarcity of business actors and of the multiplicity of domains
- Unstable dynamics, unpredictable formal networks
- Strong informal networks that withstand external shocks

Relational Dimension

- Mostly direct ties because of need for deep knowledge of counterparts to create trust/embeddeness
- Mostly informal ties due to weakness of formal institutions and a smaller size, leading to personalized contact, extensive bargaining
- High frequency of actions due to informal environment, and in the case of interactions with customers, due to irregular income

Based from the above, one can expect that the BoP market will exhibit the behavior depicted in Table 2, after an external shock. It will be able to absorb a relatively fair magnitude of change because even if the structural (i.e. low centrality, high dispersal) dimension appear to repel change, the relational dimension (i.e. strong bonds and many direct ties) compensate. Moreover, it will be able to self-organize despite institutional voids (Webb et al, 2010), weak formal institutions and weak formal networks because of diversified membership and high informal ties. Finally, it may have a high capacity to learn and adapt because of the presence of both bonding and bridging ties, diversified membership and uncentralised structure, but at the same time it risks a low degree of learning and adaptation due to high density and many structural holes. Therefore, using the framework, the BoP market exhibits varying degree of resiliency during periods of disturbance. It is expected to self organize quite well; moderately be able to survive and cope with the change; and have a moderate potential for learning and adaptation. Since the structural dimension pose some challenges, the informal market may provide a knowledge-base that enhances the adaptation process, which can be in the form of indigenous and traditional knowledge-based systems that parallel adaptive management in their reliance on learning by doing, and the use of feedback from the environment to provide corrections for management practice (Berkes, Colding and Folke, 2003). The challenge is to develop institutional structures and encourage local organizations to interact with each other and with organizations at other levels.
Table 2: Network and resiliency dimensions at the BoP

<table>
<thead>
<tr>
<th>Dimensions of Collaboration</th>
<th>Dimensions of Resiliency</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Magnitude of shock that the system can absorb and remain within a given state</td>
</tr>
<tr>
<td>Structural</td>
<td>Low due to low centralization and dispersion</td>
</tr>
<tr>
<td>Relational</td>
<td>High due to many bonding or direct ties</td>
</tr>
</tbody>
</table>

5. Conclusion

In an attempt to explore the linkages between resilience and collaborations, this paper investigated the dimensions of both concepts and derived hypotheses linking them. The resulting theoretical framework gives an overview of the complexities of collaboration in general, and reveals the multifaceted nature of resiliency and networks in particular. Thus, one can not jump into the conclusion that cross-sector collaborations are vehicles for building resiliency in communities. It is a double edge sword that can both increase and decrease the magnitude of change that can be absorbed, capacity to self-organize, and ability to learn and adapt. The paradoxes of embeddeness, bonded and bridging ties, and closed and open networks have emerged from the discussion, showing that there are trade-offs along the way. The case of the BoP exemplifies how the different dimensions of collaboration would have varying degrees of resiliency.
This paper is not without caveats. First, this exploratory study covered various themes and concepts belonging to different theoretical and academic disciplines, thus, necessitating more definitions, explanations and discussions of the literature. Narrowing down and deepening the analysis to a certain dimension can generate equally insightful ideas. Secondly, additional empirical studies, empirical data and cases at the BoP can enrich the application of the framework. It should be noted that the framework can be applied to other contexts, aside from the BoP. Thirdly, additional literature can strengthen the claims supporting the hypotheses. Thus, a more extensive review is required at hand.

For theory, it is the intention of this paper that the seeds of thoughts impregnated by the hypotheses can lead to fruitful subsequent studies. Empirical testing of the hypotheses, additional theorizing and refinement of the framework, and focusing on certain areas and concepts can be the next phases to be taken. The theoretical framework developed can be a useful overarching tool guiding future studies that can delve deeper into the main themes and concepts that emerged, namely absorptive capacity, social capital (i.e. bonding and bridging ties), and embeddedness. Ensuing studies can also address questions and issues neglected by this paper. For instance, how do collaborations and networks reorganize after a change? How do they absorb or repel change? How do they learn from the change? This paper can also contribute to the development of management research by way of taking an alternative paradigm that integrates a resiliency perspective. Finally, it can inspire studies to come up with better network measurements when taking into account the different dimensions.

For practice, this paper can be useful by cautioning against the critical factors and possible perils of collaboration. It can encourage practitioners to build network structures and relations that are more conducive and favorable for the different dimensions of resiliency to thrive. The framework also gives an insight to view collaboration as a dynamic process with different phases, thus, guiding long-term approach and decision-making. In the end, we are all reminded that one should balance the art of learning to live with change and uncertainty, of stability and instability, of nurturing diversity, of combining different types of knowledge for learning, and of creating opportunity for self-organization.
References


