

Leading Innovation using Social Capital in Public-Private Partnerships

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Abstract

Social capital is a multidimensional concept used by scholars from different disciplines to demonstrate the benefits of accessing resources through relationships in social networks. More specifically, scholars have found that social capital can accelerate positive innovation outcomes. As a scholar-practitioner, my purpose in addressing *How is social capital created and used to facilitate innovation in PPPs?* is to help leaders in both public and private sectors find ways to collaborate more effectively to manage innovation. In a connected global economy, the ability to share costs, resources and risks across sectors is critical to develop and sustain competitive advantage. Unfortunately, research has shown that in practice, many PPPs fail to achieve anticipated innovation outcomes, due in part to a breakdown of social relations between partners. A qualitative research study investigated critical incidents on innovation projects in PPPs, from the perspective of innovators across sectors. Taking an interdisciplinary approach, I was guided by the metatheory of critical realism, which made it possible to identify the generative mechanisms that may have triggered innovation outcomes. Three modes of inference were used to analyse interview data, which referenced different industry sectors and types of innovation, producing a holistic understanding of the interaction of social capital and innovation in PPPs. The article presents a conceptual model that explains how relational, cognitive and structural social capital interact with boundary spanning practices to facilitate innovation. The model can guide innovation management in partnership contexts and assist leaders across the private and public sectors.

Keywords: Innovation, social capital, public-private partnerships, boundary spanning

Introduction

In this article, I share results of an applied interdisciplinary study of innovation in the specific context of strategic partnerships between the public and private sectors, using a social capital lens. For entrepreneurs and private businesses, the ability to collaborate, innovate and partner through inter-organizational networks has become critical for competitive advantage in an increasingly connected world (Huggins, Johnston & Thompson, 2012). Meanwhile for governments, creating an innovation-based, entrepreneurial economy has also become a priority as global competitive pressures and uncertainty have created a need to innovate to survive (Carree & Thurik, 2010; Jenkins et al, 2011; University of Alberta, 2011). Consequently, public-private partnerships (PPPs) are a growing form of collaboration in the evolving global context of innovation, where each sector seeks to tap into complementary capabilities to accelerate innovation. Unfortunately, research has shown that in practice, many PPPs fail to achieve anticipated innovation outcomes, due largely to weaknesses in social and inter-organizational relationships (Malmström & Johansson, 2016; Meier et al, 2015; Oshin-Martin, 2014). A holistic perspective on the social and relational antecedents of innovation is becoming more urgent as digital changes, complexity and volatility in the nature of work are further driving the need for innovation across sectors (Gregory et al, 2018; McKinsey & Co., 2018; OECD publishing, 2019).

The evolving global context of innovation

Innovation, defined as “the process of improving, adapting or developing a product, system, or service to deliver better results and create value for people” (Partnership for Public Service & IDEO, 2011, p. 6) is believed to be the most important capability for organizational growth - vital to the competitiveness of regions and nations (Autio et al, 2014; Beugelsdijk,

2007; Bramwell, Hepburn & Wolfe, 2012; Zheng, 2010). Innovation in practice “is not only a technological but also a social and organizational phenomenon” (Lember et al, 2019, p. 375). A broad perspective on types of innovation was chosen as appropriate for this applied research study. Doblin’s Keeley developed a taxonomy with ten types of innovation, which can refer to how an enterprise is configured (e.g., process or network innovation), an enterprise’s collection of products or services, as well as customer facing elements (e.g., brand or channel innovation) (Keeley et al, 2013).

The pace and cost of innovation today require interaction and collaboration of a diversity of actors across sectors, and the convergence of different types of knowledge (Doepfer, 2013; MacGregor and Carleton, 2012; Masciarelli, 2011; Zheng, 2010). Such convergence is leading to more frequent collaborations between industry and governments to support policy development and delivery of government programs and services, through various contractual arrangements and strategic alliances also known as public-private partnerships (PPPs) (Oshin-Martin, 2014).

Innovation in public-private partnerships. PPPs are a growing form of collaboration that aims to develop complementary capabilities across sectors, sharing both resources and risks in the innovation process to achieve economic and social benefits that could not be accomplished independently (DEEPCentre, 2015; Hartley, Sorensen & Torfing, 2013; Maurrasse, 2013; McCarter & Fudge Kamal, 2013). Living or innovation labs are an example of a PPP, where stakeholders across sectors are invited to creative spaces (in person and virtually) to take an active part as co-creators in the development and evolution of public policies and services to achieve a desired socio-economic impact (Paskaleva, 2011; Schuurman et al, 2013; Verhulst, S., 2018; Yuan & Zhang, 2016).

PPPs can take many forms. “Strategic partnerships” go beyond contractual PPPs, by looking for opportunities to achieve synergies (Malmström & Johansson, 2016); pursuing more *permeable* management practices to maintain stronger relationships and share information, in order to mitigate risks over a long contract period (Saz-Carranza & Longo, 2014; Formica & Carayannis, 2008). Strategic PPPs as defined here provide the context for this research study. Common features of successful PPPs include compatibility of partners’ goals, mutual commitment and access to partner resources, and reciprocal opportunity for organizational learning (Lo, Stepicheva, & Peng, 2016). To maximize the competitive advantage of their collaboration, strategic partnerships also need to function as a network, relying on trust among partners to innovate and create value (Esteve, Ysa & Longo, 2012; Wellstead, Lindquist & Sinclair, 2003). Strong linkages and knowledge sharing across various disciplines between partners can improve performance on projects, speed of innovation, and organizational learning (Nissen, Evald & Clarke, 2014; Russell et al, 2015).

The complexity of PPPs raises many obstacles: formal contracts are usually insufficient to regulate collaboration and meet desired goals (Beck et al, 2012), and many partnerships struggle to create synergies that go beyond commercial transactions (Geddes, 2005; Jamali et al, 2011). Different norms and values can impede the flow of knowledge (Marheineke, 2016). In turn, these cognitive gaps can hinder coordination and problem solving, which are necessary for innovation. Gausdal (2014) writes that “there is a trend from transactional, often confrontational, contract relations to more collaborative longer-term relationships based on actively nurtured trust and a commitment by each party” (p. 128). Others attest that in PPPs, collaborative efforts requiring the joint development of strategies and synchronizing of operations have not been successful to the degree anticipated (Greenwood, 2010). Developing sufficient trust with

partners, which has been shown to affect the success of PPPs, remains a difficult issue (Beck et al, 2012; The Economist Intelligence Unit, 2016). Other barriers to collaboration and innovation in PPPs include different orientations to risk and uncertainty, reflected in different decision-making, resource allocation, and finance processes (Accenture, 2015; Oshin-Martin, 2014), and resulting in a “culture shock” (Remillard, 2016). Bureaucracy and communication breakdowns can make matters worse (Hartley, Sørensen, & Torfing, 2013; Yuan and Zhang, 2016). Collaboration problems impeding innovation in PPPs have been attributed to the lack of social competence of stakeholders (Baron & Markman, 2003). While there is clear evidence of the pressing need for leaders across sectors to engage effectively in partnerships to innovate, a gap in knowledge remains about the specific mechanisms that enable or inhibit innovation in PPPs.

Social capital and innovation in public-private partnerships. Social capital represents potential and actual resources that can be accessed, used, and combined across organizations and networks (Bowey & Easton, 2007). Subramaniam & Youndt (2005) have observed that “unless individual knowledge is networked, shared and channeled through relationships, it provides little benefit to organizations in terms of innovative capabilities” (p. 459). More recently, Russell et al (2018) have written that “today’s technological, service and social innovations are increasingly co-created interactively by participants of collaborative networks,” confirming that essential resources to manage innovation, such as information, talent, and funding flow through relationships across networks. In PPP settings, business networks foster tacit knowledge exchange and economies of scale (Audretsch, 2011; Bowey & Easton, 2007; Chisholm & Nielsen, 2009).

The current consensus is that creating and using social capital, by strengthening social cohesion, trust, reciprocity, and institutional effectiveness (Franke, 2005), has positive effects in

managing the innovation process to create business and social value (Camps & Marques, 2014; Doepfer, 2013; Jamali et al, 2011; Masciarelli, 2011; Nahapiet & Ghoshal, 1998; Subramaniam & Youndt, 2005). Social capital promotes risk-taking by creating safety through trust and stability of relationships in collaboration activities, especially in fields where single organizations cannot undertake the level of risk required for innovation (Camps & Marques, 2014). By facilitating goal alignment, exchange of resources, and novel combinations of knowledge among partners (Camps & Marques, 2014; Rass et al, 2013; Xu, 2011), the acquisition and management of social capital are seen to play an essential role in the entrepreneurial success of individuals, organizations, and communities (Gedaljovic et al, 2013; Rass et al, 2013).

Leaders now understand that social capital is not generated automatically in relationships, networks, or PPPs. Innovation through social capital requires committed investments on the part of individuals, organizations and other stakeholders in the ecosystem (Zheng (2010), to target “enablers” of innovation such as cooperation/collaboration, information flow/sharing, risk taking, and knowledge creation (Camps & Marques, 2014; Rass et al, 2013; Xu, 2011). Through these innovation enablers, social capital can help to improve economic performance at individual, organizational, regional and national levels (Adler and Kwon 2002; Nahapiet and Ghoshal 1998; Zheng, 2010).

Theoretical framework

A social capital lens on innovation was selected as the theoretical framework to anchor this research. Across multiple disciplines from sociology to economic geography to entrepreneurship, social capital has been alternately defined as an individual asset, as a collective or community asset, or as a relational dynamic. These perspectives, referred to as the micro,

macro, and meso approaches to social capital, are further described here as they have influenced how social capital supported this study.

Early writings took a micro approach and emphasized the value of social capital as an individual asset, embedded in social networks (Bourdieu, 1972, 1986; Coleman, 1988). Individuals who create and maintain social contacts achieve benefits related to trust, reciprocity, flow of information, and co-creation. Political scientist Robert Putnam (2000) introduced a macro approach by aggregating the social capital of individuals to give a description of the “collective social capital” of the population of an area (Ferri et al, 2009, p. 144). In neighbourhoods, cities, regions or countries with a high level of social capital, citizens tend to trust one another. This facilitates coordinated actions to improve the efficiency of society. The meso or instrumental approach (Franke, 2005) focuses on relational dynamics between and within groups, and on resources that emerge from social ties, and which can be banked for future use. While the instrumental value of social capital is essential to understand how social capital produces concrete results, it is not as well documented (Franke, 2005; Cote & Healy, 2001; Kwon & Arenius, 2010).

In this study, I integrated the individual *micro* and collective *macro* levels of social capital by taking an instrumental *meso* perspective and adopting the Nahapiet and Ghoshal (1998) definition, which is anchored in the resource-based view of the firm. Their model defines social capital as “the sum of the actual and potential resources embedded within, available through, and derived from the network of relationships possessed by an individual or social unit” (p. 243), and has been widely adapted and elaborated upon by others to study the contribution of social capital to entrepreneurship and innovation (Camps & Marques, 2014; Dorhofer et al, 2011; Gedajlovic et al, 2013; Jonsson, 2015; Muniady et al, 2015; Totterman & Sten, 2005;

Zheng, 2010). The authors identify three dimensions of social capital - the relational, cognitive, and structural. The relational dimension captures the substance of social relations, including trust, norms, obligations, and identity. The cognitive dimension refers to shared systems of meaning among parties (codes, vision, purpose, language, and narratives), which create a common basis for transactions and partnerships. The structural dimension refers to the properties and configuration of social relations, including the strength and centrality of ties among members of a social unit, organization or community. Strong ties within groups (bonding) and weak ties between groups (bridging) facilitate information sharing (Burt, 2009; Granovetter, 1973; Nahapiet & Ghoshal, 1998).

I investigated the individual experiences of participants on innovation projects in PPPs in order to produce “data about the behavioral and other micro-foundations of innovation that could provide a more fine-grained understanding of the role of social capital... in the relationship between innovation management and firm performance” (Payne et al, 2011, p. 513). Past research has often used proxies to study these complex concepts (for instance, using trust for social capital, or investments in research and development for innovation). In contrast, this study incorporates a multi-level, multi-dimensional and interdisciplinary approach “to fully embrace social capital as a multilevel theoretical perspective with the potential to bridge domains” (Ibid.). This study addresses a gap in empirical evidence by linking theory and practice related to social capital (Camps & Marques, 2014; Doepfer, 2013; Jamali et al, 2011; Masciarelli, 2011; Nahapiet & Ghoshal, 1998; Subramaniam & Youndt, 2005).

Critical realism as metatheory

This study, and particularly the qualitative methodology, were guided by the metatheory of critical realism. According to critical realism, the purpose of research is the development of

abstract theories about fundamental social structures and mechanisms that help to explain concrete social phenomena (Manicas, 2006). The task of the critical realist researcher is to identify, understand and explain the relationships between what we experience, what actually happens, and the underlying mechanisms that produce events in the world (Danermark et al, 2001).

To fulfill the main scientific tasks of understanding and explanation of social phenomena in context, the critical realist researcher conceptualizes theories that represent causal or generative mechanisms, both observable and non-observable (Manicas, 2006). Mechanisms within critical realism are abstract representations that provide the logic of a process that *could* have produced an observation, and allow the researcher to “abstract” a theory that explains the concrete reality observed (Manicas, 2006). Mechanisms are thus regarded as tendencies that can be reinforced or suppressed as they interact with other mechanisms in open systems, and which may not always manifest empirically (Danermark et al, 2001). Multiple models of a single phenomenon may be considered in tandem for the purpose of generating an incrementally more precise understanding of the phenomenon in question (Mueller, 2014).

Research Design

In order to identify more explicitly the linkages between innovation and social capital in the PPP context, PPP innovation projects were chosen as the unit of analysis. The criteria for selection were initiatives that incorporated an entrepreneurial journey within a PPP where the implementation or commercialization of innovation was an overarching goal (Lamine, Jack, Fayolle & Chabaud, 2015; Turró, Urbano, & Peris-Ortiz, 2014).

Methods

Data Collection

To carry out the investigation into PPP innovation projects, which were the units of analysis (Camps & Marques, 2014; Lindgren & Packendorff, 2009; Muller, 2014), I interviewed twenty-five participants from nine different PPPs where innovation was a goal. This is illustrated in Table 2. Participants from each project, from both private and public sectors, took part in two interviews to strengthen the descriptive validity and credibility of the information obtained (Butterfield et al, 2005).

The first set of interviews explored critical incidents that made the difference between success and failure on each project, in relation to the implementation of innovation more specifically (Butterfield et al, 2005; Coetzer, Redmond & Sharafizad, 2012). Interview transcripts were shared with participants to verify the accuracy of data.

In a second, semi structured interview, participants identified characteristics of social capital that manifested in the critical incidents, after reviewing the definition of the concept from the theoretical framework. This approach made it possible to initiate with participants the abductive analysis (described in the Discussion), as part of the data collection process, using social capital as a theoretical frame. Social capital was also explored in a visual way, as each person was asked to draw their social network on the project and partnership, with arrows indicating the flow of resources among key participants in the network. Interviews with participants from different sides of each partnership triangulated information about critical incidents related to the success or failure of innovation. (Creswell, 2013; McKeever, Anderson & Jack, 2014).

All interviews were guided by the Critical Incident Technique (CIT) (Flanagan, 1954; Fitzgerald et al, 2008), and were supplemented with secondary data about each innovation project. Critical incidents can be positive and/or negative events that make the difference between success and failure on a project. The CIT has the advantage of focusing on respondents' accounts of significant events (incidents) that have actually happened, rather than on generalizations or opinions (Lincoln & Guba, 2005; McKeever et al, 2014). The CIT combined objective realities and subjective experiences (Butterfield et al, 2005; Chell & Pittaway, 1998). This approach enhances current scholarship since the experiences and perspectives of individual participants on innovation projects are less frequently studied (Autio et al, 2014; McKeever et al, 2014) and few studies examine the evolution of innovation in relation to social capital over time. The CIT has previously been applied to study the complex phenomenon of innovation in partnerships (Nissen et al, 2014), and in critical realist settings (Neergaard & Leitch, 2015).

Table 2***Projects, innovations and participants on PPP innovation projects***

	Sector/Project	Sample innovations	Interviews - 2017-2018
1	Public sector innovation lab	Accelerated and impactful service design using digital consultation process	• Executive director, federal government • Innovation lab facilitator • Sales director, software company
2	Medical research/Industrial park	Innovation platform for genomics research; new diagnostic tools	• Business Development director, Industrial park • Lab manager • 2 lab executives
3	Forestry/Federal industry transformation program	New patent and novel applications of pulp products; new procurement process	• Program manager, federal government • Project manager, Forestry company A • Project manager, Forestry company B
4	Public policy / Regulatory guidance for industry	User and employee centred web design of complex policy communications	• Innovation lab facilitator, federal government • Public sector Designer/Facilitator • Innovation entrepreneur/Facilitator
5	Public Art installation/Airport	Branding and marketing of tech sector in a municipality	• Executive director, industry association • Artist-entrepreneur
6	Animal health	Networking platform to respond to health outbreaks across jurisdictions	• Program manager – federal government • Program manager, province A • Program manager, province B
7	International development/ Ethics	Successful outreach and response-based approach to fight corruption in African country	• Program manager, federal government • Executive Director, federal government • International Development consultant
8	Software design	Alpha version of successful software	• Program manager, University • Entrepreneur: Software developer
9	Public sector modernization / Human Resources legislation	Fast-track approach to capacity development of federal small agencies in implementation of new human resources management legislation	• Organization Development consultant – public sector • Consulting company executive • Management consultant

Sampling. A purposive, iterative sampling strategy was applied (Anderson & Jack, 2002; Creswell, 2013; Palinkas et al, 2013; Rowley, 2012) to identify nine past or current projects that were part of formal strategic PPP arrangements. Criterion sampling (Patton, 2015) was used to ensure that innovation projects reflected the specific context of PPPs. Projects had in common the implementation or commercialization of innovation as a stated goal. Table 2 shows the diverse sectors of activity and types of innovation represented. All projects involved at least one partner organization based in North America. The variety of projects and the perspectives of both public and private sector participants made it possible to see what elements were common across projects and sectors, and to synthesize findings into a conceptual model.

Stepwise approach to data analysis. Guided by a critical realist's metatheory, I applied the three complementary analytical methods to the data collected as part of this study: induction, abduction and retroduction. I first took an inductive approach to identify patterns and document key themes emanating from the empirical data. Secondly, I used abductive analysis to review the data recoded using the theoretical framework of social capital, reflecting participant responses to questions from the second interview about characteristics of social capital that manifested on their innovation projects. Finally, I used retroductive analysis to reconsider the findings and results of abductive analysis while adding the boundary spanning concept to the theoretical framework.

I analyzed data using different methods because each data analysis method provides only one of several possible interpretations (Danermark et al, 2001). While logical deduction proves that something must be a certain way, induction, abduction and retroduction show how something *might be* (Habermas, 1972 in Danermark et al, 2001). Sandelowski & Barroso (2003) propose that any qualitative design is emergent. This enabled me to develop two models of social

capital, which in turn answered the research question with greater precision.

Findings

Data about critical incidents from the nine different PPP innovation projects were synthesized using an inductive approach to document key themes emanating from the empirical study. Thematic analysis, following Braun and Clarke (2006), was used as the interpretive method to identify meaningful patterns in the interview data, without making reference to the theoretical framework. Four themes emerged from the inductive analysis:

- 1) Nurturing trust in personal relationships;
- 2) Creating a shared mindset across the partnership;
- 3) Configuring and maintaining networks for collaboration; and
- 4) Developing adaptive capacity.

Each theme describes a key activity that was found to facilitate innovation in PPPs, including its *impact on innovation* and *reinforcers*. Interviewees shared that critical incidents which made a difference to the success or failure of innovation on their projects were often centred around some form of communication: a face-to-face conversation, meeting, or training session. Alternately a critical incident could be a prototyping activity or the development of a collaboration agreement. A critical incident could even be a conflict, leading to a falling out with a partner. More positive incidents included the identification of a new opportunity or creation of a new patent within the PPP. Interestingly, innovation was managed as an actual process on only one project studied. More frequently, it was viewed as the outcome of a problem solving process (among engineers and project managers); of an experimentation process (among scientists); or an engagement process (among sales or facilitation professionals). Based on data from interviewees, innovation outcomes were measured in terms of increased sales, client

satisfaction, external recognition, socio-economic impact, environmental sustainability, or simply project goal achievement

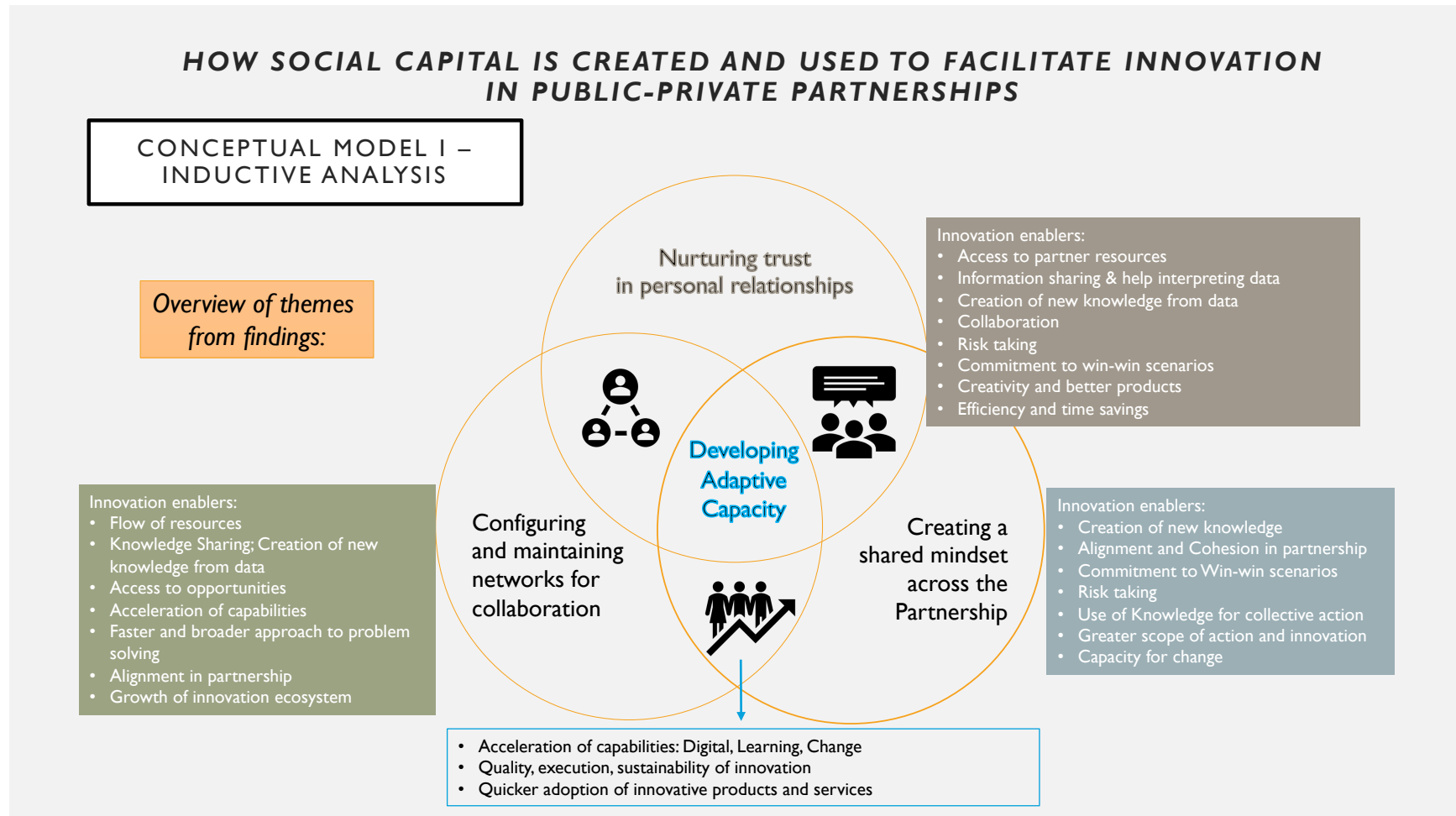


Figure 2: Conceptual model one – How social capital is created and used to facilitate innovation in public-private partnerships. By S. Plante, 2020. Copyright by Sylvie Plante, 2020.

Theme one: Nurturing trust in personal relationships. Interviewees shared insights about how they nurtured trust in personal relationships to pursue new opportunities and facilitate innovation outcomes. In some cases, building connections through trust and relationships with the people making an innovation possible became their priority. In the words of a program manager in a health network:

Innovation is part of what we do. We want some innovation to get better but really it's not the main focus we have. For the kind of job we have, the main focus is always to build the trust, and maintain it.

Another scientist in the same network said: “It was really the relationships that were more important than the data; and building those relationships and building trust.”

On PPP innovation projects, nurturing trust in personal relationships activated a number of *innovation enablers* including access to partner resources, information sharing and risk taking, producing win-win scenarios on joint projects for partnering organizations. The Executive Director of a public sector innovation lab explained: “All that was coming through in amazing, very quick capability to engender trust, and to have mutual understanding of the potential benefit – a win-win-win-win situation for everybody around.” A private sector entrepreneur working with the innovation lab on a service design project added: “When you have that sort of bonding and trust, it's easier to be more creative faster, and move forward; and also make the end product better.”

Nurturing trust in personal relationships on PPP projects was reinforced by factors such as the continuity of relationships, as well as demonstration of commitment and consistent values over time. The reputation and credibility of partners was an antecedent to trust formation in personal relationships. In the words of a program manager interviewed: “If you don't have the trust, it's always harder to innovate.” There was a common acknowledgement that “trust takes

time to build.” When there was no relationship or if trust had been broken with a partner, the flow and exchange of information were limited. As a result, there was less willingness to take risks, and projects did not achieve their innovation potential. In one PPP, it took five years before two different research organizations communicated face-to-face to check in on one another’s progress. By the time they reconnected, the original project leaders had changed and it took many months to renew the collaboration. One executive in this partnership commented:

The major thing I would do differently is include them in the project on an ongoing basis ...Make sure that there's a constant contact ... from the beginning; make sure they're invited to meetings; included; giving them updates, so that when it comes to the point that we need them, it's not starting from scratch all over again.

Theme two: Creating a shared mindset across the partnership. According to the interviewees, creating a shared mindset across the partnership meant having a common way of thinking about innovation, and about the means to achieve innovation outcomes. Interviewees emphasized that a shared mindset did not arise automatically. Individuals who were trusted across the partnership were needed to align the components of shared goals, vision, and knowledge, and to overcome obstacles related to risk and identity differences across organizations. Interviewees explained that the foundation to articulate shared goals and a shared vision was a shared language, including common definitions that helped to explain what a project or innovative idea was about to potential collaborators. A shared language generated consensus in collaborations between different occupations or when moving between the theory and application of knowledge, as in between scientists and technicians.

In successful collaborations, public and private sector leaders were able to create a shared mindset around risk, and the role of their respective organizations to manage risks in order to innovate. Speaking about his private sector partners, a public sector program manager said:

I think there is a necessity for departments or programs such as [ours] to ... help de-risk that innovation, to help companies to take those steps forward. And some can do it on their own, or when they want to take larger risks, having government at the table with some dollars to help support that, help de-risk that, is important and valuable.

His private sector counterpart concurred:

Without their support, we were not proceeding with this project. ... the risk of this type of innovative project is too high...for conservative industries ... But with governmental support, it's a very great motivator for industries like forestry industry, to invest in new areas and to invest in emerging technologies like bio refinery technologies to produce new bio materials.

Creating a shared mindset across the partnership was reinforced in the findings by leadership practices such as facilitating win-win scenarios. Targeting collective versus individual success increased the chances of positive innovation outcomes, such as the creation of more advanced medical diagnostic tools resulting from collaboration between public and private sector scientists, or the sharing of public health best practices across jurisdictions, resulting in faster disease containment. Further, the promotion of a shared, win-win vision of the innovation potential of projects by senior leaders was reinforced by interpersonal relationships:

Without relationships and dealing with people at a higher level ... I don't believe we were, on our own, really trying to develop this innovation... in our organization. I can say there's a really strong need to create a combined vision that you're on, to bring all the players.

Theme three: Configuring and maintaining networks for collaboration

Interviewees described how networks were used alternately as structures, resources, and/or communities to facilitate collaboration and innovation on PPP projects. First, networks created structures and containers for data, which facilitated communication and exchange, and extended the resource base on PPP projects. Cross-functional or inter-organizational committees are examples of a network structure that was prevalent on the PPP projects studied.

Collaboration networks were sought for their knowledge and advice; or to obtain feedback on

prototypes as part of the innovation process. In addition to helping project participants feel less isolated, collaboration networks facilitated the detection of critical problems that might require innovative solutions.

On more than one project, interviewees reflected on the power of networks to fuel innovation. In the words of one program manager: “We now understand that you need a bunch of things in order to make this happen. You need people. You need a network. You need trust.” He added that “the innovation was actually forming a network more than anything else.” Networks, especially when they were supported by social technologies and platforms, made it possible to share data more easily, to discuss new ways of using existing data, and to transform data into new knowledge for innovation.

Access and control of material resources such as physical spaces or specialized technology enabled collaboration networks to become recognized as hubs imbued with their own power to generate creative momentum toward innovation. Having a good physical space to carry out innovation activities made it possible to convene different parties to collaborate and generate ideas face-to-face. The digital capabilities and proficiency of different partners to upload, share and analyze data also impacted the ability of PPP projects to innovate using shared data. These factors came together on one of the projects, as expressed by the sales director of a software company:

For those 14 months ... if they didn't have the hardware, they couldn't have fully adopted the innovation; they couldn't have changed how they did things; they couldn't have thought and acted differently, and we would not have participated in their learnings, and been able to ... take advantage of those learnings, because they gave us a lot of feedback that ended up steering some of the decisions in our product. So without that discrete choice, things would have been on a completely different path, or at least a delayed path.

Networks were also used as communities to build connections, and extended outside the immediate partner organization to experts in the broader community. Conversely, the absence of commitment to a community or ecosystem mindset was seen as an inhibitor of innovation and project success. In the words of the program manager on a software development project:

I think there was a pool of goodwill, which I put on the asset side of an ecosystem – you know, if you can productively tap that. And I think you make your tech ecosystem much more strong. And it wasn't done; simply was not done – not in this community.

Whether they were viewed as structures, resources and/or communities, effective collaboration networks addressed gaps in clarity, integration and alignment, which might have prevented the achievement of innovation objectives in the partnership.

Theme four: Developing adaptive capacity

Since innovation involves exploring the unknown in many ways, a capacity to learn, respond to unexpected reversals, and adapt to change fairly quickly was seen to be essential to successful execution on the PPP projects studied. Developing adaptive capacity, or dynamic capabilities to learn and change, emerged as a theme in the research. Interviewees mentioned proactive actions they took to increase the ability of project partners and stakeholders to learn and adapt in response to ongoing changes in data, processes, structures and people occurring as part of the innovation process. In order to develop these learning and change abilities, interviewees found that the practices of stakeholder engagement and experimentation played a key role.

With respect to stakeholder engagement: Interviewees remarked that learning how to engage effectively with stakeholders, and deepening relationships with customers and suppliers, were in themselves target outcomes of their partnering experience on PPP projects. A reciprocal, rather than dominant, relationship with stakeholders allowed for ongoing collaboration to

improve solution ideas and produce innovation. With respect to experimentation: This was described as the essence of innovation by a number of participants on different projects, to the point where one facilitator who felt strongly about this said: “I hate the word innovation. I try not to use it. I try to use experimentation, because innovation means something different to everybody...” This facilitator defined experimentation simply as: “Thinking differently...a willingness to try something new, and to try to fix that problem; keeping it very simple.” Experimentation was used as an approach to collaboration and learning that was inclusive of partners and stakeholders.

Interviewees recognized that developing adaptive capacity in PPPs impacted positively on quality and execution, and facilitated a quicker adoption of innovative services and products by target users. The private sector partner on an international development project explained that there was rapid take-up of new ethics training he had developed through outreach, which was innovative in the way it considered the cultural context of the African country: “All this material – they couldn’t seem to get enough of it, and they wanted to incorporate it in the permanent curriculum of lower schools, middle schools, and universities system they had there.” Activities such as training, facility tours, and proofs of concept created a shared learning journey for project participants, solidified collaboration for innovation, and developed the adaptive capacity of individual members and organizations on PPP innovation projects.

Developing adaptive capacity required flexible structures across the partnership that allowed for information sharing across functions and levels. Interviewees suggested that adaptive capacity was facilitated by exposure to different groups e.g., connecting corporate services and program delivery, or scientists with technicians or engineers in a manufacturing plant. Flexible structures also gave people freedom to try new ways of doing things. It was suggested that

sometimes a new language needed to be developed within the partnership, as a way of developing capacity for making systemic changes that were necessary for an innovation to be implemented and take hold. This came up on the international development project addressing corruption, where the private sector partner helped to evolve the definition of ethics for public servants in the African country. He explained: “We were now going to make it part of their leadership paradigm, that they not only have to be ethical but they have to build ethical organizations.”

When PPP projects developed adaptive capacity through activities that fostered learning and change abilities, they were better able to leverage new tools and technologies to innovate with. For example, the public sector innovation lab director explained the significance of leveraging the beta version of a software tool through their private sector partner:

[The software] was interesting as a kind of horizontal tool that expanded horizontally the tree of business ... that we had... We started thinking... we are actually helping Canadian business here. We're doing it, in a real hands-on, practical way, and we're doing it in our co-design projects; in our capacity building events where we're experimenting.

This innovation lab extended their experimentation process to the broader community, and saw this as a key contribution to the growth of the innovation ecosystem as a whole.

Analysis and Discussion

Two types of critical realist analyses were carried out: abductive analysis and retroductive analysis. Both approaches blend theoretical constructs with empirical data by using creative reasoning “to formulate new ideas about the interconnection of phenomena” (Danermark et al, 2001, p. 93), for the purpose of generating theory that can be useful for leaders in practice. These analyses strengthen the results that emerged from the inductive thematic analysis of the interview data.

Abductive Analysis

I used abduction to answer: What meaning is given to the critical incidents on the PPP projects when these are interpreted through the lens of social capital as a theoretical framework? The abductive analysis enabled me to link empirical observations from the inductive analysis with the multi-dimensional concept of social capital to expand on the themes of trust in personal relationships (relational social capital), creating a shared mindset across the partnership (cognitive social capital), and networks for collaboration (structural social capital). This is shown in Figure 3. The abductive analysis also helped to explain some of the paradoxes that came out of the empirical data.

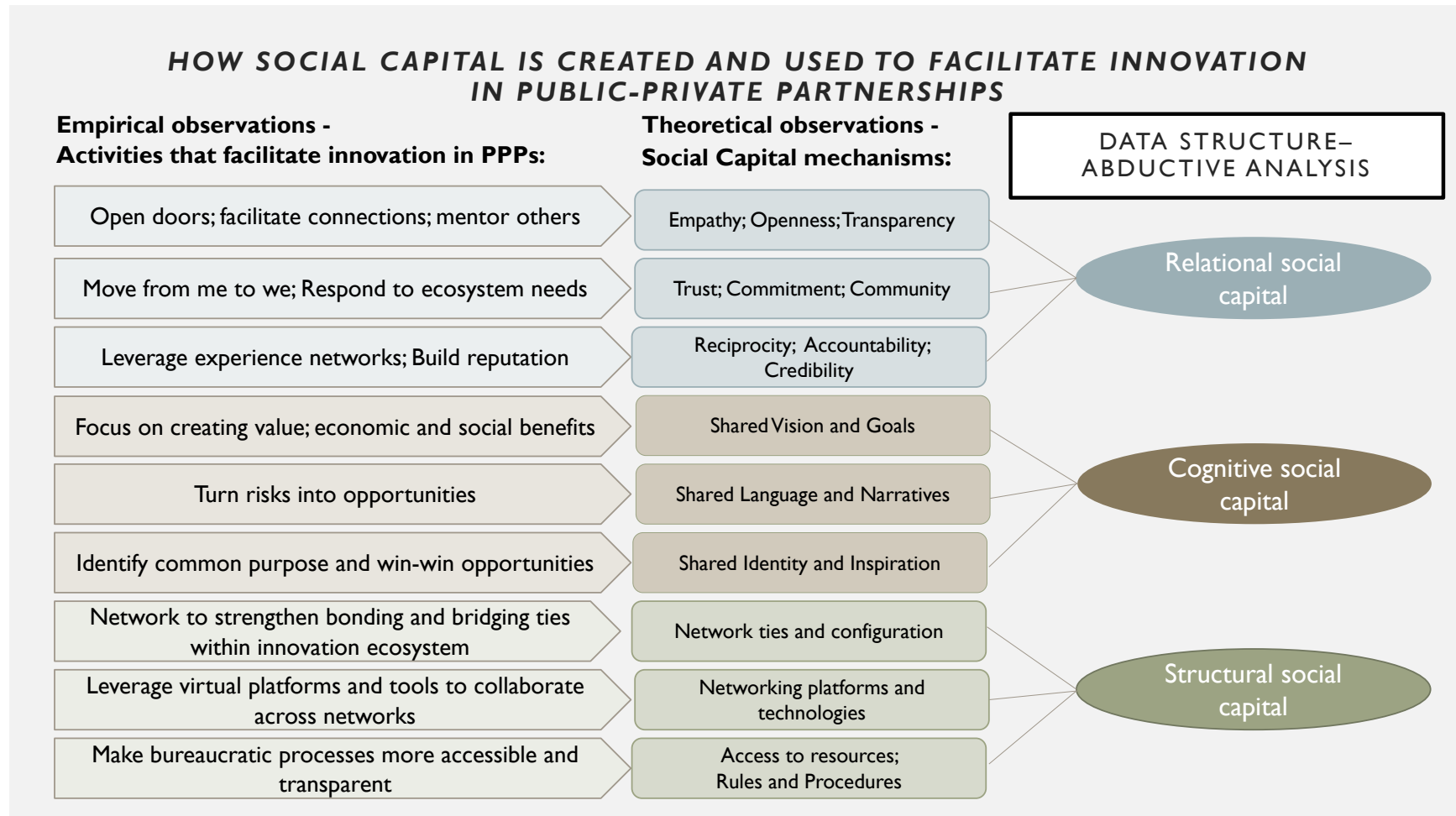


Figure 3 - Data structure from abductive analysis. By S. Plante, 2020. Copyright by Sylvie Plante, 2020.

Relational social capital. The theory of relational social capital emphasizes that trust is a critical factor for coping with uncertainty and ambiguity in the pursuit of innovation (Williams, 2002). This provides a theoretical foundation for theme one, *nurturing trust in personal relationships*, and helps to explain a paradox in the empirical findings related to the balance of formal and informal relationships as PPP partners pursued innovation. The paradox is that while PPPs are complex initiatives that require detailed legal and governance arrangements, the more formal the partnership, the more informal the relationships of people across the partnership needed to be, in order to maximize innovation outcomes.

According to interviewees, the quality of personal relationships among partners was a factor that could foster or inhibit innovation. Trust needed to be developed first in personal relationships, in order to foster more knowledge sharing and collaboration. The findings showed that the ability of partners to move from contractual to relational communications early on in the project was an important factor in nurturing trust to foster innovation. It appears that once personal trust was established, additional benefits such as greater risk taking, enhanced access to partner resources, and assistance in interpreting competitive information could be transferred to the organization and PPP; not the other way around.

Cognitive social capital. The theory of cognitive social capital emphasizes the importance of developing common goals, norms, language and narratives to facilitate collective knowledge creation and risk taking in the innovation process. This provides a theoretical foundation for theme two, *creating a shared mindset across the partnership*, and helps to explain a paradox in the empirical findings related to the balance of risk and opportunity in the pursuit of innovation. The finding that the public sector became a risk taker in the enablement of innovation in PPPs seems to run counter to a common assumption that the public sector is risk

averse, and the private sector is the primary risk taker when it comes to innovation. The research showed that public organizations are indeed structured to minimize risk in their internal processes, however public sector partners played a critical role in de-risking innovation for the private sector. A shared mindset in the partnership about the potential for innovation to contribute to the common good helped to transform risks into opportunities. Conversely, the absence of a shared mindset around risk could create uncertainty, or halted innovation efforts altogether.

Structural social capital. The theory of structural social capital explains how the properties and configuration of collaboration networks, such as strength of ties and structural holes within PPPs (Burt, 2009), can be leveraged to generate new types of resources (e.g., intellectual and financial capital) to facilitate innovation (Muniady et al, 2015; Zheng, 2010). This provides a theoretical foundation for theme three, *configuring and maintaining networks for collaboration*, and helps to explain a paradox in the empirical findings related to the role of networks in the pursuit of innovation in PPPs. The paradox could be expressed as - *First build the network; the innovation will follow*. Much innovation literature emphasizes managed processes such as product development as the core of innovation. The findings showed that in partnership projects that bring together multiple players from different sectors, it is not always possible to manage innovation as a distinct or integrated process. The entrepreneurial ethos of *paying it forward*, by investing in the potential and reputation of partners in social networks, offered a different pathway for innovation that allowed it to emerge as a by-product of the expansion of collaboration networks, rather than as an end in itself.

Retroductive Analysis

Retroduction is a form of causal analysis at the core of the critical realist explanatory model (Danermark et al, 2001; Manicas, 2006), whose goal is to discover the interacting mechanisms and structures that generate a phenomenon (Mingers 2004; Olsen 2004). Using theory as a starting point, the steps include imagining a mechanism which, if it were real, would account for the phenomenon in question, in this case innovation in PPPs. It is in this step of retroduction that the key linkage of boundary spanning with social capital was identified more explicitly as a key insight of the research.

Boundary spanning. Social capital is not generated automatically; it requires people to interact through various relationships to facilitate the exchange of resources that enable innovation. The theory of boundary spanning strengthens the conceptual model by showing how specific boundary-spanning practices and behaviours align social capital mechanisms to facilitate innovation in PPPs (see Figure 4). Defined as a leadership practice and process that links people and knowledge across sectors (Williams, 2002), boundary spanning emerged as a relevant complementary concept to deepen our understanding of how social capital facilitates innovation in PPPs. Through boundary spanning, the goals of different partners are aligned around a shared purpose to encourage mutual commitment (Beck et al, 2012; Greenwood, 2010; Noble & Jones, 2006). In the management and social sciences literature, boundary spanning has been found to facilitate innovation processes, specifically in partnerships that span different sectors (Marheineke, 2016; Nissen et al, 2013; Oshin-Martin, 2014; Ryan & O'Malley, 2015; Sahadev, Purani & Malhotra, 2015; Williams, 2002).

Figure 4 illustrates how boundary spanning can activate social capital to improve innovation outcomes, and shows how results from the inductive, abductive, and retroductive analyses are reframed within a dynamic, interactive model to inform practice. This model

includes boundary spanning to explain more clearly how social capital is created and used to facilitate innovation in PPPs. The model shows the interaction of cognitive, relational and structural social capital with boundary spanning practices identified in the empirical data, such as personal relationship building, stakeholder engagement, collaborative problem solving, and experimentation.

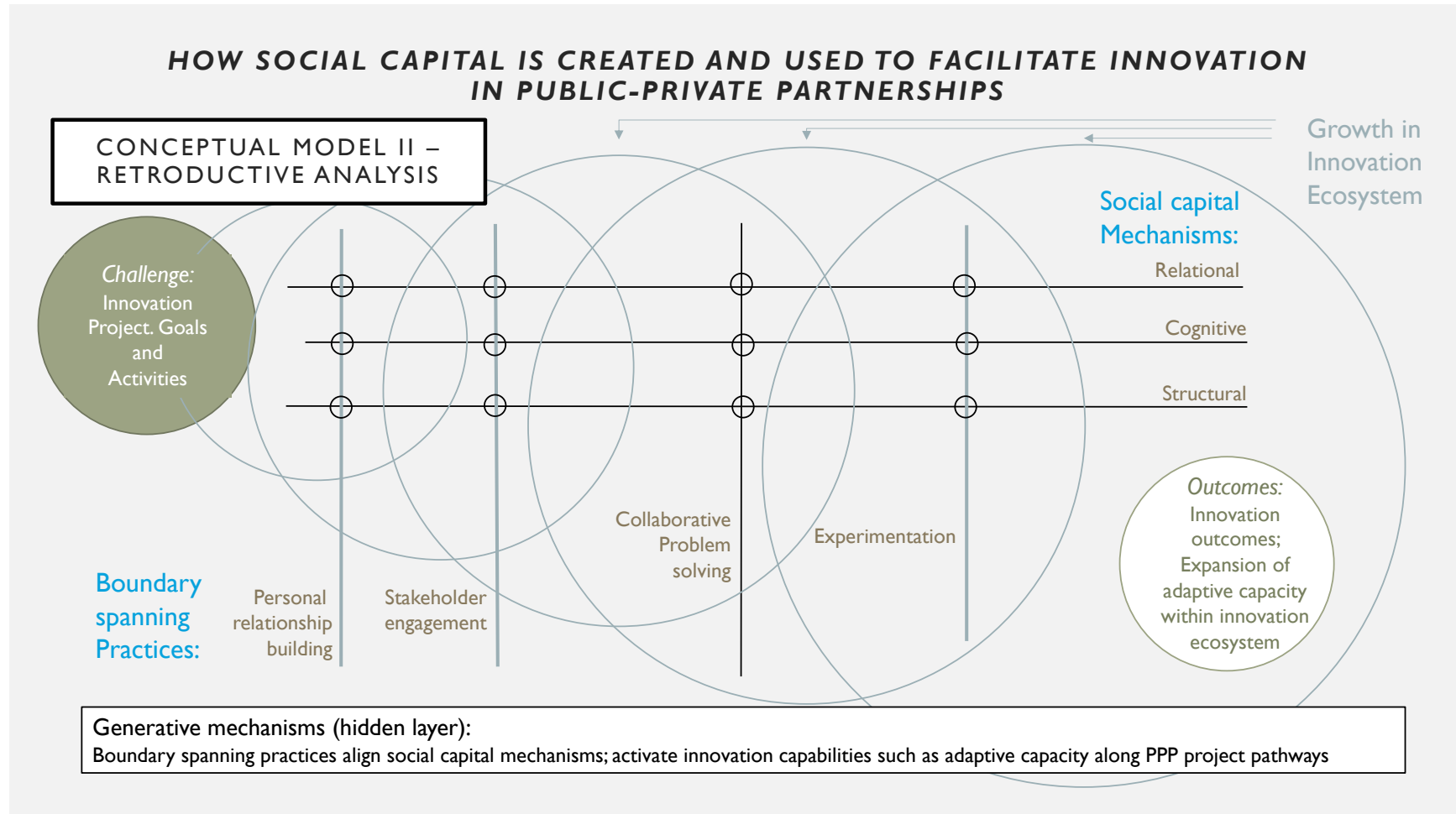


Figure 4– Conceptual model two – How social capital is created and used to facilitate innovation in public-private partnerships – integrating boundary spanning practices. By S. Plante, 2020, Copyright by Sylvie Plante, 2020.

Boundary objects are interfaces that facilitate boundary spanning activities (Sahadev et al, 2015). The sociologists Star and Griesemer (1989) first introduced the term to describe the elements that help to connect and translate different perspectives across boundaries, in order to achieve a common goal (Impedovo & Manuti, 2016). The significance of boundary objects for this research is that they provide a focus for the interface between social capital mechanisms and boundary spanning practices in the pursuit of innovation. Boundary objects can take multiple forms, including common definitions or shared infrastructure such as a database or virtual collaboration platform, which facilitate collaboration and communication in PPPs (Impedovo & Manuti, 2016; Marheineke, 2016; Nair & Tandon, 2015). Boundary objects provide a common frame of reference for individuals with different mental models to coordinate individual and collective action (Marheineke, 2016; Wenger, 2000).

Boundary spanning and social capital. The boundary spanning concept refines further our understanding of how social capital facilitates innovation in PPPs, more specifically in relation to theme one in the findings: *Nurturing trust in personal relationships*. On PPP projects, relational social capital can be seen as an element within the boundary-spanning practice of personal relationship building, used to nurture trust and facilitate innovation.

The boundary spanning model demonstrates how boundary spanning practice is an ongoing social accomplishment emanating from the behaviours of actors in PPPs (Andersen et al, 2015). The success of boundary spanning is thus influenced by the personal competencies of individuals who play these roles. By going back and forth across organizational boundaries, boundary spanners foster trust and reduce risk through open communication and joint decision-making. Acting as network catalysts, entrepreneurs, facilitators and mediators, boundary spanners apply collaborative skills and strategic thinking to the resolution of complex problems,

often dealing with disparate bodies of technical knowledge and professional expertise. They represent their own organization while developing empathetic relations with their counterparts in partner organizations, and learn to negotiate in non-hierarchical decision environments (Ryan & O'Malley, 2015; Williams, 2002).

The research findings revealed a number of examples of this type of boundary spanning in action. For example, one research participant used the metaphor of *water that connects the streams* to describe his role connecting and aligning different organizations to partner in medical research. The boundary spanning practice of personal relationship building, at first through simple physical interaction, empathy and transparent communication, helps to build trust, affective commitment and a shared identity over time (Fleming & Waguespack, 2007; Greenwood, 2010; Neergard & Ulhøi, 2006). Boundary objects such as face-to-face conversations and meetings in physical spaces are important levers that support trust formation and collaboration, which are conducive to innovation across boundaries (Greenwood, 2010).

The boundary spanning concept also helps to explain better how cognitive social capital facilitates innovation in PPPs in relation to theme two: *Creating a shared mindset across the partnership*. On PPP projects, cognitive social capital can be seen as an element within the boundary-spanning practices of collaborative problem solving and experimentation, where it helps to create and build on a shared mindset to facilitate innovation. The findings revealed a number of examples of this type of boundary spanning in action. For example, on a web design project with public sector policy leaders, consensus on common definitions was generated prior to sharing regulatory information online. The literature reveals that part of boundary spanning involves interpreting professional jargon that can create artificial barriers to problem solving (Ernst & Chrobot-Mason, 2011). Here, common definitions and visualization tools including

whiteboards were examples of boundary objects that reduced ambiguity and complexity in the design process.

The boundary spanning concept further improves our understanding of how structural social capital facilitates innovation in PPPs, more specifically in relation to theme three in the findings: *Configuring and maintaining networks for collaboration*. On PPP projects, structural social capital can be seen as an element within the boundary spanning practice of stakeholder engagement, interfacing through boundary objects taking the form of shared infrastructure (databases, virtual collaboration platforms) (Marheineke, 2016; Nair & Tandon, 2015). This digitization provided a bridging structure to exchange complex knowledge, which is conducive to innovation (Greenwood, 2010). An example of stakeholder engagement using digitization in the research was the creation of an online application to facilitate collaboration among a network of expert reviewers of funding applications to a university program.

Effective networking, which is “the predominant *modus operandi* of choice of the boundary spanner” (Williams, 2002, p. 117) enables boundary spanners to know who needs to be involved in a project, and who could be mobilized for successful negotiation. Networking occurs at and around meetings, but is most effectively undertaken outside formal decision-making structures, especially in conversations. On the web design project with public policy leaders, the innovation lab project and others, networking and facilitated learning in communities of practice helped to maintain and expand collaboration networks, thereby enhancing the adaptive capacity of the PPP and its members (Grawe et al, 2015; Nair & Tandon, 2015; Williams, 2002).

The boundary practice of experimentation was identified in theme four: *creating adaptive capacity*, and was characterized by openness to the emergence of *crazy ideas*, playfulness, fun, and stretching of boundaries on the PPP innovation projects studied. It was noted in the findings

that the innovation lab extended its experimentation process to the broader community, and saw this as a key contribution to the innovation ecosystem. Experimentation was especially effective in supporting innovation when it was encouraged by leaders through personal advocacy (Andriopoulos & Lewis, 2009) and the allocation of time, attention and resources needed; for instance in the forestry project where the public sector innovated the procurement process to expand access to funding for innovation projects across the industry.

Conclusion

This research shows how leaders who come together to innovate in public-private partnerships can use social capital as a lens to understand the flow of resources through relationships on their projects, and develop boundary-spanning practices to support the management of inter-organizational relationships and the collaboration process for innovation. Relational social capital through face-to-face conversations in personal relationships helps to nurture trust. Cognitive social capital through shared goals and language helps to create a shared mindset. Structural social capital through virtual tools such as online platforms helps to configure and maintain collaboration networks. Over time, these complex interactions across boundaries in open systems help to develop adaptive capacity for individual members on PPP innovation projects, for partnering organizations, and for the innovation ecosystem as a whole. In spite of the emergent nature of innovation on many projects, it remains possible to understand innovation activities systemically, and to manage innovation strategically by applying boundary-spanning practices that leverage the three dimensions of social capital.

This research produced conceptual and empirical contributions in the form of an explanatory framework that is applicable to real PPP situations, because it reflects fully the complexity and dynamics of the phenomena studied – social capital and innovation – in the

context of PPPs. Some tenets of social capital theory were corroborated, and the study clarified how social capital facilitates innovation in PPPs through intermediary innovation enablers such as risk taking, information sharing, and commitment to win-win scenarios. Moreover, these innovation enablers combine to increase the adaptive capacity of individuals and organizations in PPPs over time, and influence the connectivity and growth of the innovation ecosystem as a whole.

The models I have developed explain how social capital is created and used to facilitate innovation in PPPs, and point to implementable practices that can increase individual and collective capabilities to develop and implement innovations that deliver business and social value. In PPP settings, boundary spanning practices such as personal relationship building, collaborative problem solving, experimentation and stakeholder engagement can be used to align social capital mechanisms and accelerate innovation outcomes. The research also revealed a number of examples and forms of communication which acted as boundary objects and important vectors to facilitate innovation in PPPs, at the intersection of boundary spanning and social capital. The final retroductive analysis challenges PPP leaders to ask how they can position themselves to manage innovation as an emergent outcome rather than a standard business process, by focusing strategically on the management of boundary spanning practices using social capital.

Limitations and future research

The models I have proposed represent a coherent and credible response to the research question, however they are only two of many possible interpretations and thus remain provisional. Testing the models in practice would confirm whether the conclusions remain valid across different types of partnership, including boundary spanning organizations such as

economic development agencies and social enterprises with a mandate to facilitate innovation.

Since this research suggests that the success of boundary spanning in PPPs is strongly influenced by the personal competencies of individuals who play these roles, for future research, it may be valuable to explore boundary spanning practices more explicitly in relation to innovation in PPP settings, in order to provide guidance on the development of individual capabilities to facilitate innovation in partnerships.

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