

Assessing Trust Capital in a Potential Technological Co-Innovation Partnership

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Abstract

In this research, we try to identify assessment criteria to enable selection of the right partners based on considerations other than technological complementarity and financing capacity. Our approach uses the concept of social capital as an indicator of the quality of the partner in an ecosystem reflective of the innovation process. Trust is a key component of a company's social capital; therefore, based on identifying prevention modes and confidence risk, we propose a proactive assessment of a partnership's "trust capital."

Key words: confidence risk; social capital; technological partnership; trust capital

JEL classification: D24; O32

1. Introduction

Innovation is a collective action of creation and knowledge transfer, which requires the structuring of an ecosystem in which partnerships are established on the basis of collaboration and trust (Castaneda, 2012). This research focuses on a technological firm engaged in building new partnerships in a co-innovation process; accounting for confidence risk, we seek to define a new concept not yet treated in the literature. In particular, pilot industrial firms are increasingly confronted with a great number of partners in a collaborative project due to increased R&D sharing. They must to select the right partners, enough upstream of the selection process to avoid future collaborative problems (e.g., extra costs, no respect of the time to market, hold-up on created value). Assessing trust capital is critical to innovative project managers. In this conceptual research, we try to identify assessment criteria that enable actors to select the right partners to assure the future success of the

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knowledge transfer, apart from considerations related to technological complementarity and financial capabilities. Innovation brings together in an ecosystem several partners who share a common vision of the artifact to be created. In Section 2 we observe that these partners collaborate in establishing “trust capital” built on mutual perception of the “social capital” of involved companies. In Section 3 we conclude by proposing a system to pre-assess partners using criteria for determining the trust capital modes to minimize partnership risk and measure the intensity of the partnership commitment.

2. Technological Partnership and Ecosystem of Innovation

Innovation production has become intensive (Le Masson et al., 2006), open (Chesbrough, 2006), and agile (Wilson and Doz, 2011). Innovation is a product of the environment and is determined by its context. It does not appear in isolation as emerging technology can often be used in many possible applications. Consequently, other innovations are created both upstream and downstream. All innovations become interdependent and generate numerous exchanges. Those that develop with external partners place the pilot firm at the center of an ecosystem. The success of an innovation involves the careful identification and accurate tracking of potential partners and supporters who have as much interest in success as those responsible for the firm’s internal product development process (Adner, 2006). Two complementary but seemingly opposite dynamics build the ecosystem of technological innovation: spontaneity and willingness (Castaneda, 2012). Spontaneous innovation can occur through “the attractiveness of the innovation effect,” in which technical and industrial partners become interested in the development of assignable piecemeal solutions for a new product to offer future users. Deliberate innovation can develop from a firm’s choice to search for technical complementarity to optimize the use of resources. Successful innovation depends on the effective launch of all systems and subsystems that make up the overall solution. A project manager is obliged to consider three aspects of each potential partnership: development time, risks, and integration time.

Thus, a detailed analysis of the partner facilitates visualization of the interaction with other actors, evaluation of the skills and knowledge gaps of the partner, and the estimated duration of development and ownership that other partners can contribute. This kind of review attaches great importance to the “capital experience” of its partners. A design perspective moves successively from a product to solutions area and then to the experience area. At the same time, the innovation skills area has moved from the firm and its resources to the enlarged and enhanced network of business skills. Access to skills for innovation is not restricted to the firm but extended through an expanded network of suppliers and a community of users (Prahalad and Ramaswamy, 2003). Partners, as users, will thus be integrated into the ecosystem. An innovation-oriented collaboration essentially constitutes an economic community of actors who maintain strong interactions in the business and create value for customers (Adner and Kappor, 2010). This economic community of actors

generates its own routines and co-evolves its skills and responsibilities by adopting a common vision and by helping each other as guided by pilot enterprises. The ecosystem of an innovation project is bounded by time and a common goal and is consolidated by trust capital. In the design of technological products, systems, subsystems, and component integration require a high level of interaction because partners have to produce interfaces. They may require the transfer of knowledge and technology. In open innovation, more and more firms transmit and repatriate technologies. To obtain technological innovation, a pilot firm needs to oversee technological and managerial fields. It must establish a shared vision of technology, standards, and regulations, but also motivate and select the right partners able to share and collaborate. The firm needs a good assessment of potential partners' social capital as required by the design area.

2.1 Social Capital: A Valued Premium Asset with Which to Select Partners

Social capital is defined as “the set of actual or potential resources linked to possession of a durable network of more or less institutionalized acquaintanceship or international recognition, or in other words, the belonging to a group as a set of agents that are not only with common properties that can be perceived by the observer, by others and by themselves, but are united by permanent and useful links” (Bourdieu, 1980). Added to this instrumental view is a functionalist vision that facilitates, on the one hand, the various actions of the individual in the social structure, making possible the achievement of certain goals that could not occur without this vision (Coleman, 1990) and, on the other hand, collective action, including cooperation, which provides the network, trust, and reciprocity (Putman, 1993). An essential ingredient of innovation is a creative idea generated from either an internal or external source to the enterprise. Product design moving to experience area needs four types of experience within the partnership to be realized: customization, innovation, integration, and network (Prahalad and Ramaswamy, 2003). This is when the importance of social capital comes into play. It enables organizations to access critical resources, such as knowledge, through a social exchange (Ozdemir and Demirci, 2012). So there is a strong link between innovation and social capital, confirmed with the work of Roxas (2008) in Asian firms. Social capital promotes the conditions for knowledge creation and gives the firm a competitive advantage in the market (Nahapiet and Ghosahl, 1998). It also facilitates access to knowledge available outside boundary firms and co-evolves with knowledge through two activation mechanisms: absorptive capacity and disseminative capacity (Bapuji and Crossan, 2005).

Absorptive capacity (ACAP) has three dimensions: acquisition, assimilation, and absorption (Cohen and Levinthal, 1990; Tsai, 2001). It is a set of organizational routines to produce a dynamic organizational competence through acquisition, assimilation, transformation, and exploitation of knowledge with a mechanism of social integration as a contingency factor (Zahra and George, 2002). Social integration can positively or negatively influence absorptive capacity and operates as a relational competence contingency factor (Todorova and Dursin, 2007). The

ACAP is composed of two components: the potential of absorptive capacity (PACAP) to perform acquisition and assimilation of knowledges, and the achievement of absorptive capacity (RACAP) of transformation and exploitation of knowledge (Bapuji and Crossan, 2005). The PACAP helps the firm to identify and assimilate the knowledge, and the RACAP helps the firm to enhance the knowledge assimilated (Zahra and George, 2002). For Todorova and Dursin, assimilation and transformation must be conceptualized in parallel steps and not sequentially. There is also a relationship between absorptive capacity and the performance of small and medium-size enterprises through strategic alliances in technological innovation (Flaten et al., 2011), even in big enterprises (Lichtenthaler, 2009). These create four necessary conditions to combine and share knowledge: access to stakeholders, anticipating the obtained value, motivation, and the ability to combine information and experience to create new knowledge. However, the absorptive capacity is not reason enough to develop a performing social capital. The transaction costs for transferring technological knowledge play a major part, and technological transfer depends to the capacities of the firms to develop capabilities of transfer able to reduce their transaction costs (Lichtenthaler and Lichtenthaler, 2010). If the receiver of technologies needs a minimum of absorptive capacities, technological source must have desorptive capacities (DACAP). The desorptive capacity development can help firms in favoring technological transfers by its heuristic action of learning and improving management.

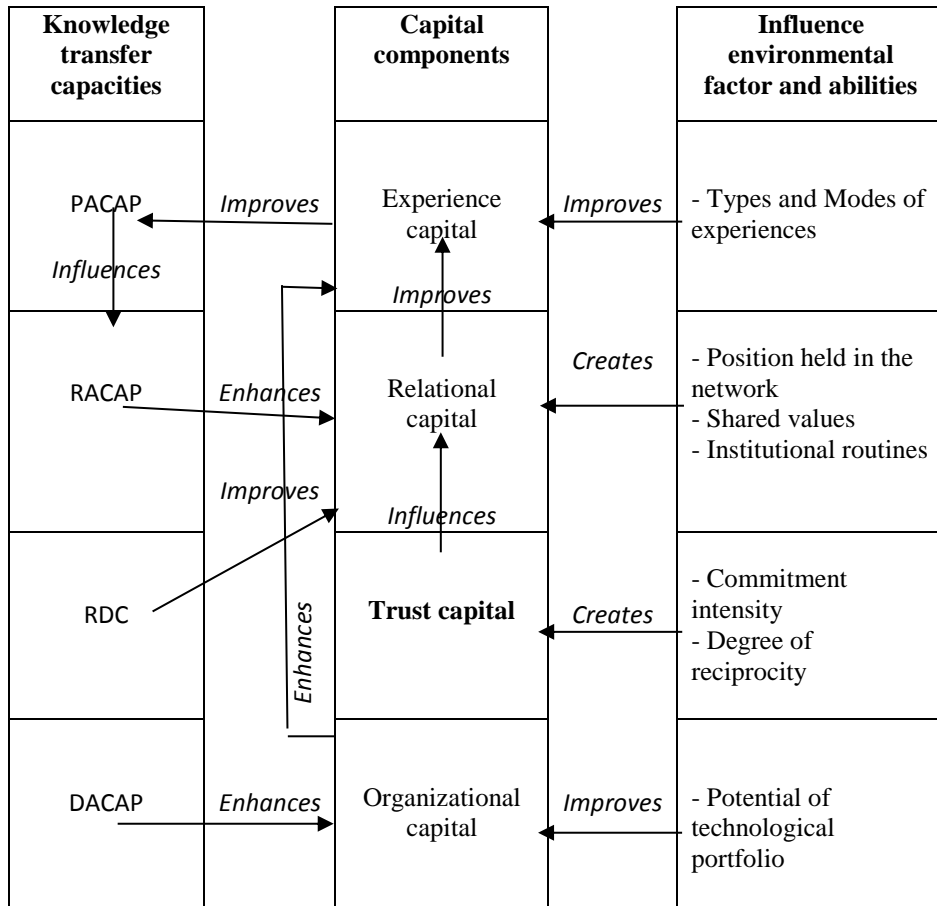
But another element plays an important part in the success of knowledge transfer: the disseminative capability (DC) as an enhancement mechanism of social capital (Nahapiet and Ghosahl, 1998). Oppat (2008) makes a distinction between *initial* disseminative capability (IDC) and the *reflected* disseminative capability (RDC). The IDC has a part in knowledge transfer based on characteristics and needs of knowledge receivers even if their activities are not required. The RDC is based on activities and behavior of knowledge receivers in partnership interactions. Dissemination of knowledge has a positive effect on the cognitive ability of a company and its capacity to integrate and influence the network, making knowledge transfer easy. Four organizational dimensions act as support for knowledge transfer: structure, culture, information technology, and human character traits. The structural dimension refers to the organization and its working methods in terms of formalization and centralization practices. The cultural dimension reflects the organizational values and routines, especially the importance of trust, collaboration, and the value of learning. The technological dimension refers to all technical and computer tools to share information. The human character dimension reflects the attitude of people and, in particular, the individual capacity to transmit and absorb knowledge. These elements contribute to creating an environment more or less favorable to knowledge transfer (Préfontaine et al., 2009) and being able to broach dissemination outlook (Minbaeva and Michailova, 2004). Several advantages result from the dissemination of knowledge: legitimacy of knowledge through the creation of a corpus of knowledge (Boisot, 1995), strengthening the position in the network and the increment of relational capital (Powell et al., 1996), attraction preceding

partnership by amplification of structural social capital (Ahuja, 2000) and the ability to influence industry standards.

Absorption and dissemination of knowledge are two dynamic innovation processes that enable an increase in the company's social capital, convey a positive image to potential partners, and consolidate a company's position in the network. Social capital makes external knowledge access easy, but the PACAP determines the extent of external knowledge reachable with social capital. The RACAP determines the extent of external and internal knowledge mix able to produce new knowledge. The RDC improves the relationship partners and the DACAP, reduces the transaction costs, and enhances the organization. Social capital has three dimensions: structural (links in the network, the network configuration, and the quality of the organization), cognitive (codes, languages, and shared stories) and relational (trust, norms, obligations, and identification). These dimensions can be analyzed as experience capital, relational capital, organizational capital, and trust capital of the firm. They are under the influence of environmental factors and abilities, such as the types and modes of experiences (e.g., collaborative projects, co-innovation experiences) for experience capital and the position held in the network, the shared values, and the institutional routines for relational capital. The organizational capital is improving with the potential of technological portfolio of the firm. Finally, trust capital can be defined as a set of rational relationships between potential partners wanting to work together, based on confidence, and founded on their commitment intensity and the degree of reciprocity. Our observations lead us to the schema shown in Figure 1.

This figure highlights trust capital as a core component of social capital structure and its influence on relational capital. But, the absorption and dissemination of knowledge, which imply an intention to collaborate, can be achieved if the partners have confidence in themselves and in others and are aware of "confidence risk."

Figure 1. Framework of Social Capital Concept



2.2 Trust: The Key Element of Social Capital in the Proactive Partnership Approach

Trust is frequently cited as a key factor promoting cooperation and exchange of knowledge (Adler, 2001; Tsai and Ghoshal, 1998). For Reynaud (1998, 2001), trust is often seen in anticipation of the behavior of others on which its own action is based. Trust is a relationship (Dasgupta, 1988) and it is also a delegation (Karpik, 1996). It can't be compared to credibility, which is an attribute (lack of relationship), and, even less, to legitimacy (power acceptance process). These concepts are however very close to trust. For political economy, trust between people within a society is the social capital that fuels economic performance (Fukuyama, 1994). Thus, trust can be defined as a relationship delegation based on a delegate anticipation behavior. It is also a virtuous circle because, according to Simon (1957), if limits of rationality mainly refer to infrastructural characteristics of the individual

(cognitive abilities) and his environment (information available), confidence will likely highlight “interactive” limitations that affect the cognitive process itself. In front of an excessively unbalanced environment (complexity, uncertainty, information asymmetries), trust helps to rebalance subjectively this relationship in order to decide and to act in such a context. Building a relationship of trust through physical interactions encourages a relational view of rationality (Neuville, 1998). If the actors’ preferences are forged in and through interactions (Friedberg, 1993), their rationality can’t be considered rather an extension of the relationship with others than an isolated individual cognitive process. Asymmetry and reciprocity of commitment are the two essential and inseparable characteristics of a trust relationship. Asymmetry is characterized by a different degree in the parties’ commitment and reciprocity in their bilateral or not bilateral character. Regarding the distinction between *confidence* and *trust* in the literature, the *trust* concept is translated as “the reliance on and confidence in the truth, worth and reliability of a person or thing” (Dictionary Collins). Seligman (1997) considers that *confidence* primarily concerns the relationship between individuals and their social system, and *trust* reflects mutual respect of and faith in individuals, regardless of their roles and social status. Earle (2010) identifies two forms of trust, each of which reflects specific types of history. Relational trust, called *trust in the review*, is based on the intentions of others. These antecedents are indicators of intentions, such as the similarity value and positive affect. Calculated trust, called *confidence in the review*, is based on the capabilities of others. These antecedents are indicators of abilities or skills, such as evidence or expertise. In a partnership, each party is alternately delegate. This relationship of mutual trust enables a reduction in asymmetry (knowledge is shared) but does not necessarily imply reciprocity in the intensity of the commitment of both parties. The level of commitment will depend on the perception of the partner through the view of the social system to which it belongs (culture, ethics, and so on), the community relations it maintains (community of practice, clusters, networks, and so on), and faith each partner has in the other (the image of the partner). This approach questions the rationality of trust. Aubert and Sylvestre (2001) have said that “it is clear that under a strict rationalism, the use of trust, to establish a contractual relationship [which is the case in a partnership] is problematic. First, this action establishes the failure of reason in using an external sense to found cooperation [example of a cultural difference]. Then using this confidence confronts us with an insurmountable dilemma: either trust escapes rational criticism, or it is subject. In the first case, confidence is rooted in community ties, ethnic, cultural or religious, not questioned as such. Confidence while failing default universality and may lead to various overflows: intolerance, xenophobia, racism, and so on. In the second case, that of being subject to a purely individual and instrumental rationality, it becomes impossible.” Transposed in the case of a potential partnership, the mere ownership of community can make actors forget the need to have the basic skills required by the dynamic partners in the project. Confidence then escapes rational criticism. Conversely, a potential partner may be chosen because it has sought to market standards technology, even if it is not

in the network. In this case, trust is subject to rational criticism. A contractual relationship of trust between partners must mobilize expertise and contract to create a successful partnership. Expertise is a process of knowledge production, but also a process of co-production norms (e.g., precaution norms against the risk). It is an interaction process among several systems of action (political, legal, media, industrial, and so on). The contract (pact, covenant), which aims to prescribe behavior, is inevitably incomplete. Aubert and Sylvestre (2001) said “the implied terms, unspoken, regulatory fuzzy, and so on, can test the mutual trust between actors. Seeking the confidence to solve problems of cooperation, based on the interest calculation, is undoubtedly changing perspective rather than solving the aporia [unsolved contradiction in reasoning].” To establish rational cooperation between partners on the expectations of trust, and avoid the irrational, the partner must consider affects as well as internal impulses motivating social actors and push for action and exchange. But, affects are also a kind of practical system of recognition and communication, enabling the partners to discover and determine their mutual intentions. In a rational approach, if the contract is required as the prescribing behavior of actors their expertise, upstream cooperation is essential as a process of co-production precaution norms against risks. Expertise and the contract will enable an assessment of confidence risk of future partners.

3. The Relationship of Partnership Trust and Confidence Risk Management

Building relationships requires building trust. Effective listening is the foundation of trust in a relationship. The management of understanding cultural differences is also a key factor in the building of relationships. For Bashyakar and Menon (2010), having a relationship based on trust is an important source of competitive advantage because trust is assessable (though with difficulties according to some authors), rare, difficult to imitate, and often non-substitutable. For them, there are three key steps to building trust: “Conduct an audit of the trust (measuring the degree of trust in the organization), build a trusted environment (creating real participation, defining clear strategies, allowing a direct and straightforward talk, being honest), and use strategies re-entry.” These authors suggest that communities of trust must be maintained by developing behaviors of trust between individuals. But what about new potential partners?

Admitting a new partner into a project that uses technological innovation is conditional on reciprocal positive judgment of the social capital they bring and the trust capital they grant each other, regardless of the credibility and legitimacy of technical know-how and usefulness to the project. Trust capital can be determined by the types of trust and level of confidence risk. Rashid and Edmondson (2012) identify three areas of trust: trust *in the goals*, by understanding the intentions of others; *cognitive* trust, by assessing the level of confidence and refers to self-confidence and confidence in other individuals and the social systems; and *procedural* trust, which refers to determining the adequacy of procedures in relation to the difficulty of the task. We think a fourth area should be added: trust in the

collaborative experience which a future partner can prove. But high risk and difficulty of the mission are interconnected. The prerequisite for a trust relationship assumes that the partners have made a good assessment of the confidence risk for collective action. Rashid and Edmondson (2012) identify three types of risk: *enthusiasm and depth risk* refers to the true estimate of the stakes of the task and their importance in relation to the interdependence of partners; *the risk of loyalty*, which is inherent in the agreement of personal and collective goals and refers to the phenomenon of hold-up (concept issued from the theory of transaction costs); and finally, *formal risk*, which is determined through a level analysis of agreements and contracts between the partners.

We propose a first assessment (Table 1) that enables a proactive approach to a partnership and can influence the degree of a future partner’s cooperation because it advocates ways of preventing risk by setting up rationality in the relationship trust and avoiding irrational behavior. Where confidence risk and area of trust meet, we name the prevention type of partnership risk to mobilize: either *expertise*, not only in extent of knowledge creation process but also in a potential co-production of norms (precautionary) when facing risk, or by the *moral contract* (pact) that prescribes behavior to avoid tacit clauses, unspoken and vague, that could test future mutual trust. We determined the mode of dominant risk prevention at the intersection of trust area and confidence risk. For example, expertise seems to impose itself as a precaution within a formal risk in the collaborative partner experience. But the moral contract is necessary, if one believes that the task challenges in the collaborative experience can influence partnership behavior. Expertise, in all types of confidence risk, will dictate norms of precaution in terms of the understanding the partner’s visible and hidden intentions in future collaborations. The moral contract will play a regulatory role in the risk of hold-up, depending on the degree of self-confidence and in social system of partners. Because of partner interdependence, expertise is required to meet the challenges and complete the task.

Table 1. Partnership Prevention Modes Risk

Confidence risk Area of trust	Enthusiasm and depth	Loyalty	Formal
In the goals	Expertise	Expertise	Expertise
Cognitive	Expertise	Moral contract	Expertise
Procedural	Expertise	Moral contract	Expertise
Collaborative experience	Moral contract	Moral contract	Expertise

If we postulate that expertise and having a moral contract are the key factors for the prevention of partnership risk, it seems relevant to confront the drivers of commitment. The second assessment focuses on the intensity of the commitment of the future partner. We propose to measure commitment factors through a view of the social system (cultural, ethics, and so on), community relationship and faith in the other (trust), and prevention modes risk, previously discussed. So, we combine objective (expertise) and subjective (pact) approaches to create a realistic assessment.

Table 2 shows an example of a measure of the intensity of the partnership commitment between a pilot company and a new potential partner using a rating system of numbers of stars (1 to 3). This enables focusing on priorities (action plans) to gain trust.

Table 2. Intensity of Partnership Commitment

Commitment factors	View of the social system	Community relationship	Faith in the other
Prevention mode risk			
Expertise	*	**	*
Moral contract	*	***	**

In this example, we hypothesize that the pilot company estimates that the level ** is a minimum requirement to develop a lasting relationship of partnership trust. From this example, the target partner is rated low (averaging less than **) in prevention mode expertise (co-producer of precautionary norms), because faith in the other (trust) and the view of the social system was given only one *. The moral contract, meanwhile, averages **, which may be satisfactory. In this case, two solutions may be available to the pilot company: either the partnership is difficult or impossible because of insufficient commitment factors (e.g., ethics) or it is useful and even indispensable to the new technological project (holder of particular know-how), and evidence of target partner expertise on low engagement factors will be demonstrated during the negotiation phase that usually precedes contracting.

4. Conclusion

For a company, social capital reflects the ability to build relational capital and position itself in the network. Social capital is used to show a company's capabilities, values, and routines and indicates the level of trust it inspires. But there is no literature on the *confidence risk* that underlies the risk of future cooperation and exchange of knowledge. With our approach to analyzing trust capital, we are well upstream of the acceptance of cooperation determined by contracting. This position enables assessing the partnership risk, which determines the success or failure of future collaborative exchanges and the fully creative value of partners in an innovative technological project. Moreover, all partners in collaborative projects should assess their trust capital regularly because prevention modes and confidence risks change over time through technological, societal, social, and environmental evolution of companies. At this time, our research is only a conceptual approach. In the future, this assessment process with firms would be tested empirically.

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