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## Trust and Creativity: Identifying the Role of Trust in Creativity-Oriented Joint-Developments

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# ESMT WORKING PAPER

ESMT No. 08-010

## Trust and Creativity: Identifying the Role of Trust in Creativity- Oriented Joint- Developments

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# Abstract

## Trust and Creativity: Identifying the Role of Trust in Creativity-Oriented Joint-Developments<sup>\*</sup>

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In this article we report on the design, prototyping and results of a research effort aimed at identifying if and how trust affects the creativity of a partnership between two economic agents. The methodology combines an experiment and two questionnaires. The purpose of the research is to increase our understanding of trust and its impact on the outcome of cooperation, and to derive some guidance for economic actors, namely R&D managers and executives who want to build trustful innovation oriented relationships with their business partners. Specifically, we investigate the effect of trust on partners' creativity and willingness to invest financially in a joint development. Our results show that more trustful partners invest higher amounts in the alliance, while there seems to be an optimum amount of mutual trust between partners to maximize their joint creativity; if the level of mutual trust is below or above this threshold; their joint creativity seems to decrease.

Keywords: trust, partnerships, joint-innovation, co-development, creativity

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## 1. Introduction

It is widely accepted, and a growing body of research confirms it, that joint-developments have become a key instrument used by corporations to develop new products and services. Because of the shortening product lifecycles, rapid technological change and quickly evolving needs of the customers, companies no longer possess in house the full skills set to continuously develop new products and services. Consequently, to innovate, companies need to bring in knowledge and collaboration from other organizations.

According to Amabile, Conti, Coon, Lazenby & Herron (1996), "All innovation begins with creative ideas. Successful implementation of new programs, new product introductions, or new services depends on a person or a team having a good idea—and developing that idea beyond its initial state." In this context creativity is defined as "the production of novel and useful ideas in any domain" (Woodman, Sawyer & Griffin, 1993), while innovation is the successful implementation of creative ideas. In this view, creativity by individuals and teams is the starting point for innovation.

When two entities form an alliance to develop a new product or service, they typically start from a functional specification that defines the need that the new development must satisfy (e. g. a new environment-friendly car, a new mobile service for impaired consumers, a new drug targeting an emerging disease, etc.). To get to the technical specification, several options have to be generated and assessed. In this phase creativity is strongly needed.

With partnerships becoming the norm, it is useful to get a better understanding of how two (or more) organizations can generate creative ideas. Innovation oriented alliances have been studied by several scholars who have tried to identify the key success factors of these costly and resource consuming activities. Mutual trust between partners has often emerged among the factors explaining partnership success (Dyer & Hatch, 2004; Littler, Leverick & Bruce, 1995; Gulati, 1995; Hagedoorn, 1993)

In our research, we focused on the role of trust between team members engaged in a creative development and we investigated whether trust leads to a higher level of joint creativity. We also observed the impact of mutual trust on the willingness of

business partners to invest financial resources in their joint development, since innovation oriented alliances not only require creativity but also commitment from partners in the implementation phase.

## **2. Theoretical background**

The need for trust, as well as its nature and importance in alliances aimed at developing innovative products or services, has been extensively discussed in management literature.

### *2.1 Growing adoption of joint developments*

According to Jagersma (2005), an alliance is an “agreement on collaboration between two or more independent companies who exploit a tangible or intangible asset. They consist primarily of joint ventures and cooperative business arrangements involving shared risk, cost, or reward without full ownership and with a significant degree of exclusivity.”

Luo, Rindfleisch & Tse (2007) write that “to survive and prosper in today’s highly competitive environment, firms are increasingly engaging in cooperative alliances with their rivals”. They underline the changes that are taking place in several industries increasingly transformed from confrontation to cooperation between rivals.

The different strategies adopted by firms operating in various industries to conduct innovative developments have been studied by Hagedoorn & Duisters (2002) who observed that “in general companies in high-tech industries have, compared to companies in other sectors, a disproportionate preference for strategic alliances”.

Looking for ways to maximize their chances of success, firms are therefore attempting to leverage external competences by venturing into alliances with companies possessing complementary knowledge and resources. As an example, in a study on the importance of inter-company partnerships conducted by Kelly, Schaan & Joncas (2002), 94% of the technology executives interviewed believed that alliances are becoming critical to their strategy.

Despite alliances' growing importance and popularity, a considerable number of studies on the topic have shown mixed results. Inter-firm collaborations have been analyzed by scholars and most of them “find that the management of collaboration is extremely difficult, and this affects the likelihood of success” (Dodgson, 1992). It is quite common to find overall failure rates of 50–80% (e.g. Heimeriks, 2002; Kelly, Schaan & Joncas, 2002; Stuart, 2000).

## *2.2 Key success factors of joint developments*

The performance of R&D collaborations certainly depends on many factors. Forrest & Martin (1992), for instance, surveyed 144 small biotechnology firms and 70 large companies with the aim of investigating their R&D external collaborations. The main key success factors identified were agreement on strategic objectives and goals, communication, commitment, good interpersonal relations, compatibility and mutual trust.

In a study on new product development projects, Sicotte & Préfontaine (1997) surveyed 152 R&D collaborations and identified the most common critical success factors: functional excellence of the research team, adequacy of resources, decision-making authority, top management support and communication.

In both cases, hard, measurable factors are mixed with soft, qualitative ones. Yet the standard approach to entering a partnership, besides the preliminary analysis that normally includes a close scrutiny of the counterpart, consists in dedicating a large amount of resources and time to preparing a detailed contract or legal framework governing the activity of the partnership.

Furthermore, managers assess the investment required and develop detailed operational plans for the various functional areas, they negotiate equity positions, geographical locations and resources allocations. Finally, they prepare extensive reports detailing the sharing of rewards and outputs of the partnership.

A growing consensus (Cullen, Johnson & Sakano, 2000) is forming about the need to look beyond the “hard” functional side (contractual, legal, financial and operational) of strategic alliance management planning, and also take into account

its “soft” side (the so-called “relational quality” in the alliance, Ariño, de la Torre and Ring, 2001).

This approach is consistent with the findings of Gulati (1995) who studied over 2400 alliances formed by American, European and Japanese companies in the period 1970-89. Gulati observes that “what emerges is an image of alliance formation in which cautious contracting gives way to looser practices as partner firms build confidence in each other.” In other words, the better the partners know each other, the more they develop soft skills and the less they need extensive contracting.

### *2.3 The need for trust in joint developments*

Several scholars (inter alia: Bstieler, 2006; Ross, 2006; Zaheer, McEvily & Perrone, 1998) have pointed out that contracts, despite being necessary, are not sufficient to govern a joint development and the ability to rely on mutual trust is a fundamental element in determining the success of interfirm partnerships, since trust “constitutes a critical ingredient by which the partners and venture managers can weather the conflicts that economic and competitive changes, as well as shifts in corporate priorities, will throw their way” (Ariño, de la Torre & Ring, 2001).

Consequently trust is generally considered an effective governance device. Other scholars have also found that it reduces transaction cost and improves knowledge transfer between partners (Kumar, 1996). Schumacher (2006), surveying 67 German small and mid-size enterprises, showed that trust and cooperation performance are positively correlated and that “cooperative arrangements that are trust based perform better than do deterrence based relationships, making trust a good predictor of alliance success”. Schumacher’s findings are consistent with, among others, the research of Zaheer, McEvily & Perrone (1998) who, studying 107 buyer-supplier inter-firm relationships in the electrical equipment manufacturing industry, have shown that trust has a positive impact on both the negotiation process and the exchange performance. In the same vein, Kumar (1996), writing about inter-company deals, states that “exploiting power may work in the short run, but is self-defeating in the long run”, while “trust is stronger than

fear. Partners that trust each other generate greater profits, serve customers better, and are more adaptable”.

Scholars have also investigated the conditions under which trust is the most effective. Using data from 126 international alliances, Krishan, Martin and Noorderhaven (2006), found that the positive relationship between trust and performance is stronger under high behavioral uncertainty and weaker under high environmental uncertainty. In other words, the type of uncertainty faced by the partnership is more or less sensitive to the development of trust between partners; external environmental uncertainties are less influenced by mutual trust than behavioral risks internal to the alliance. Carson, Madhok and Wu (2006) explored a related issue, namely the suitability of alternative governance systems in two different forms of uncertainty: volatility and ambiguity. They found that relational governance, whose essential ingredient is trust between partners, is more adequate in cases of environmental volatility, while formal contracting is more appropriate in cases of operational ambiguity. Given that creativity oriented tasks can be considered highly ambiguous, it seemed appropriate to explore the link between trust and creativity.

#### *2.4 Trust and creativity*

Despite the fact that a general consensus is forming on the idea that mutual trust is a key success factor in joint innovative developments, the literature on the effect of trust on joint creativity remains largely inconclusive. If several authors (Jehn, 1995; Simons & Peterson, 2000; Dakhli & De Clercq, 2004) observe how mutual trust is conducive to an increase of joint/team creativity, more recent studies (Chen, Chang & Hung, 2008; De Clercq, Thongpapanl & Dimov, 2007) do not find that there is direct and positive impact of mutual trust on creativity of R&D project teams.

Indeed, trust seems to induce environments that are more open, supportive, tolerant, less hostile and less competitive (Carnevale & Probst, 1998; West & Anderson, 1996). It is argued that giving more freedom to team members tends to trigger ideas and to mitigate conflicts. All these elements should favor higher levels of creativity. Yet, previous research does not indicate the existence of a definite



link between trust and joint-creativity, thus leaving room to uncertainty about the relationship between the two variables.

Our research project aimed to further investigate the role played by trust on joint-creativity. Its ultimate goal was to try to understand if, and under which conditions, trust can help the joint creativity of two economic agents.

### *2.5 The Nature of Trust*

Despite the recognized centrality of trust, a common definition of the term is extremely hard to find. Indeed “trust belongs to the same class of highly evocative, abstract concepts such as prosperity, truth, justice, knowledge, power or freedom, which are all highly elusive, and which keep on fascinating not only academics, but anybody with some interest in social philosophical questions” (Möllering 2006).

A milestone in the understanding of the concept of trust has been the Special Topic Forum on Trust and the subsequent special issue published by the Academy of Management Review in 1998 (AMR, 1998) to which academics from several different fields contributed. Despite differences remaining in the definition of trust across disciplines, the editors of the special issue of AMR coined a definition that, over the years, has become widely accepted.

”Trust is a psychological state comprising the intention to accept vulnerability based upon positive expectations of the intentions or behavior of another” (Rousseau, Sitkin, Burt & Camerer, 1998).

Referring to vulnerability, trust implies a notion of a risk taken under specific conditions by the trustor (the person or entity) relying on the good intentions of the trustee (the person or entity that could harm the trustor) and the belief that the trustee will not, whatever the circumstances, deliberately behave in ways that conflict with the trustor’s interests.

The trustworthiness of an individual is determined by several factors. Following the seminal research of Sako (1992), several authors have adopted a taxonomy of trust dimensions that involves three components: ethical, technical and behavioral. Accordingly, trust can be defined as the simultaneous belief in a business partner’s integrity, reliability and ability to care as pointed out by Mayer, Davis & Schoorman

(1995). Based on a large scale survey of executives worldwide, Bidault, de la Torre, de Rham & Sisto (2007) showed that these three drivers of trustworthiness carry a similar weight, but vary slightly across nationalities.

In our research, we adopted this taxonomy and we assumed that trust happens when there is a simultaneous belief in the partner's integrity, reliability and ability to care.

### **3. The Measure of Trust**

Since trust is a key variable in a variety of fields, including sociology, politics, economics and social psychology, its measurements have profound implications for a variety of studies. Numerous research efforts in this direction have been attempted, with a variety of methodologies and have faced challenging difficulties.

Many national and international surveys (e.g. the European Values Survey, the American General Social Survey, and the World Value Survey) are based on the following question to assess the trust level of interviewees:

“Generally speaking, would you say that most people can be trusted or that you need to be very careful in dealing with people?” (source: [www.worldvaluessurvey.org](http://www.worldvaluessurvey.org)).

This question has been widely adopted in many surveys aiming to measure the propensity to trust. However, Miller & Mitamura (2003) investigated the application of this methodology and concluded that it does not actually measure trust or distrust among respondents, but rather differences in levels of safety in an environment. Other scholars had already expressed doubts on the reliability of such measurements in the past.

Glaeser, Laibson, Scheinkman & Soutter (2000), for instance, found that questionnaires are not sufficient to get reliable information about people's trustworthiness and propensity to trust. They recommend a combination of surveys and behavioral experiments since “by connecting experiments and surveys, we can determine the socioeconomic correlates of hard-to-measure individual attributes, and test the validity of survey measures of these attributes”.

Economists have pioneered the application of experimental methods in the research on trust. Many research designs are based on a variation of the “trust game” whereby two players are given a bank note by the experimenter and invited to receive twice as much if the bank note is returned by another person to whom the player choose to send his/her stake (Berg, Dickhaut & McCabe, 1995). These games mostly explore the “opportunistic” dimension of trust (integrity).

The general picture that emerges from the different research approaches is that trust is critical in many aspects of our life, society and companies, but considerable ambiguity remains around it in terms of both its definition and its measurement, as well as regarding the variety of its impact on performance.

It is therefore not surprising, considering the importance of trust in inter-company developments, that some academics have called for a more systematic research in this field, observing, to use Koza & Lewin’s (1998) words, “it is clear that research on trust needs to advance beyond a catch-all residual in the unexplained random error”.

#### **4. Research Design and Hypotheses**

We think that one of the key areas of research that requires advance is the study of the impact of trust on the performance of cooperation. We believe that a controlled experiment would provide a stronger support to the assumed link between trust and the effectiveness of cooperation. Among the many performance outputs, one would be of particular interest: the creativity of the partnership, since cooperation typically aims at the joint development of a product or a technology. Furthermore, we believe that an experiment should consider all dimensions of trust (integrity, reliability and caring) on the outcome of a relationship.

On this basis, we formulated the following hypotheses that we wanted to test with our experimental tool:

- H1: There is a positive impact of trust on the creative output of cooperation between two individuals in terms of the amount of creativity produced when these two individuals combine their own creative skills. The higher the trust, the higher the creativity gained by both individuals.

- H2: The higher the trust level between two individuals, the higher the financial investment that the parties will be ready to make in a joint development

## **5. The Experiment**

Starting from these hypotheses, we designed a combination of questionnaires and an experiment to best capture the perceptions, attitude and behaviors of players involved in a creativity oriented project. The purpose of the setup was to establish whether trust had an impact and which of its components was affected the most.

The questionnaires were structured in two main parts that were completed at different moments during the experiment. Most of the questions used were derived from the literature, in particular from Glaeser, Laibson, Scheinkman & Soutter (2000), and are therefore tested and reliable.

The first part of the questionnaire is devoted to assessing the amount of previous experiences that the two partners in each pair have in common (work, study, leisure) and the level of trust in the pair. We also ask questions designed to assess individuals' propensity to trust others in general.

The second part, which is used after the experiment, relates to the task itself and which role each partner played during the experiment, to the general propensity to trust and to traits of the individual character and self-esteem. Finally we collect demographic information to link propensity to trust and trustworthiness to personal characteristics.

Since trust requires an interaction between at least two actors (individuals, companies, BUs, etc), the experiment is conducted in pairs formed during the session. To do so, participants are assigned, upon registration, to two groups (red and brown). Before forming pairs (composed of a red and a brown participant), we ask each participant, through a questionnaire, to assess how much they trust each member of the other group. At this point, participants are expressly informed to define trust as they prefer. Later, however, they are questioned on the three generic dimensions of trustworthiness, with specific reference to the tasks undertaken during the experiment. Enough information on the continuation of the

experiment is provided to let participants assess their potential partners in the specific context.

To ensure genuine and honest responses, given that some questions explore ethical conduct, we designed the experiment and the surveys so as to guarantee full anonymity to the participants involved. Participants are numbered upon registration and their names are unknown to the facilitators and never stored. Prior to the experimental session, individuals have to register for the experiment by sending an email to an administrator who, in turn, communicates the time and venue of the session, so that facilitators know who attended but not who did/responded what. During the session itself, participants are identified only by a code written on a badge which they keep during the whole experiment, and they are informed that no record is kept of their identity.

Based on the result of the participants' assessment of other individuals' trustworthiness, we form the pairs for the continuation of the experiment. To form pairs, we have developed an algorithm that maximizes the difference of mutual trust among pairs and minimizes it between partners in a pair. The goal is to have a very close value of trust between the two components of each pair, (we put together individuals who either both trust each other or distrust each other), while maximizing the difference of trust among pairs.

In this way we are able to control the level of trust in each pair and maximize the variance in trust levels among pairs. The rationale for this choice is that we want to assess the impact of trust on the final outcome, therefore we want to control the variable trust to be able to map it against the performance of the pair.

The major constraint imposed by having respondents assessing each other's trustworthiness is that all participants must know each other. We were willing to accept this constraint since we need to have different levels of mutual trust which we were more likely to find in an already existing community.

While the facilitators form the pairs, participants are sent into separate rooms (red and brown), and are given an assignment to design and build a construction using 200 colored plastic bricks (red for one group and brown for the other) on the theme of a small scale "clothes stand". To remove any ambiguity, we provide participants with a photograph of a conventional clothes stand. They are also informed that

their construction will then be evaluated based on its originality and novelty in terms of both functionality and aesthetics, based on a vote from other players. The reason for selecting a functional object, as opposed to having a free subject, is to put some constraint on the constructions in order to make them easier to compare and assess.

Once the constructions are finished, participants (still divided into two groups) are asked to assess all other constructions (besides their own) by distributing 20 tokens each. Since tokens used are marked with each participant's code, the facilitator can check that no one voted for his/her own construction. The scores are then collected and entered into the dataset, but not communicated to participants.

At this stage, participants are informed of who their partner (of the other color) will be and each receives a virtual capital of 300 euros that they can decide to bet, all or in part, on the ranking of their next construction. The hypothesis is that participants will decide whether and how much to bet based on how much they trust their chances to win the next competition for the most creative construction with their partner (see H2).

After betting, participants join their partner and the process starts again: construction of a small scale clothes stand (using the total 400 bricks brought by both players), assessment and ranking.

To introduce the possibility of opportunistic behaviors, we inform the participants that after the construction, they can sell back all the bricks not used in the construction; bricks are bought back at a value of 40 Eurocents/brick.

The value of the amount bet by each participant is calculated according to the ranking of their construction. If the construction is the winning one (the one receiving the maximum number of tokens from the other players) the value of the bet will double; if it receives the least votes, the value will be zero. The value change is linearly distributed between 0 and twice the value bet. The part of capital not bet will remain unaffected by the construction process.

Before betting participants are informed that, by the end of the session, one participant will be selected randomly and receive the value of her/his capital in

euros. We have introduced this reward to ensure a more reasoned betting from the participants. Since participants know that (depending on their choices and their chance to be selected) their reward can vary from 0 to 600 euros, we hope to obtain a more rational decision, one based on the estimated chances of realizing a good construction with the partner, as opposed to one reached purely through the desire to bet for the sake of it.

Finally, we decided to limit the number of participants to a maximum of 30 per run. From a logistical standpoint, handling a limited number of respondents helps the administrative process and reduces the risk of errors. In order to increase the number of “events” and produce more statistically accurate results, we will rather opt for a higher number of runs as opposed to increasing the number of participants per run.

## **6. Results**

### *6.1 Samples*

Participants in the experiment have been recruited from MBA and Master classes in international management schools from across the world. In this article, we report our analysis on the data collected at the following three business schools:

- EM-Lyon, France, 22 participants from the MBA and the Master in Innovation Management programs
- Florida International University, 24 participants from the MBA program
- Nanyang Business School, Singapore, 20 participants from the MBA program

The standard session lasted about three hours including the experiment and the two questionnaires.

Prior to joining the session respondents were asked to take the on-line “Big5” personality test (<http://similar minds.com/big5.html>): the aim is to identify the potential influence of certain personality traits on the joint creativity of a pair.

## 6.2 Trust and creative outcome (H1)

The main reason for having the participants building two constructions, one on their own and the second with their partner, is to measure the effect of the partnership net of the bias induced by creative skills.

To assess the effect of the partnership, we consider the number of tokens received by each individual construction and compare it with the number of tokens received by the joint construction. If the number of tokens received by the joint construction is higher than the sum of the individual ones, we assume that the partnership has been “beneficial” (the joint effort better than the sum of the individual ones); if the amounts of tokens are equal, the partnership has been “neutral”; finally, a “detrimental” partnership is one that receives a smaller number of tokens than the individual constructions.

The analysis of the results obtained in this respect (See Figure 1) shows how the relationship between the effectiveness of the partnership and the average trust in the pair is not linear and shows an inverted U-shape curve.

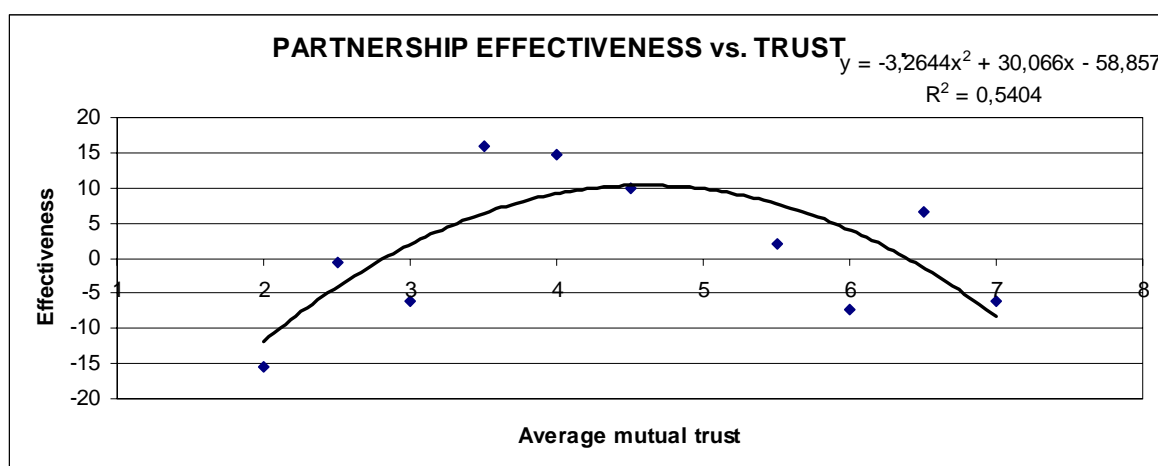


Figure 1: Partnership effectiveness versus average mutual trust

Each dot in the curve represents the average result of all the pairs with a given average mutual trust.

We performed a fit of the data with a parabolic curve (grade 2 polynomial fit) with the following specification:  $y = -3,2644 x^2 + 30,066 x - 58,857$ .

With this fit, mutual trust accounts for 54.04% of total creativity variance ( $R^2$  value of 0.5404).



H1 is therefore only partially confirmed by our data. We hypothesized a monotone increase of creativity with trust on the whole range of values. Actually, there seems to be an “optimum” level of mutual trust between partners that maximizes joint creativity gains. Trust levels below and above that value increase creativity to a lesser extent, or even decrease it, at very low or very high levels (both ends of the parabolic curve). We notice, however, that the optimum level is around 4.5 (on a scale from 1 = low to 7 = high), i.e. 64%. We could conclude that trust seems good for joint-creativity, but that high (blind?) trust might be detrimental, at least to some extent

### 6.3 Trust and investment (H2)

The betting process has been introduced to simulate the investment made by each partner when entering a partnership. The assumption that we made was that a higher level of mutual trust leads to a higher amount bet in the partnership.

The analysis of the results obtained in this respect (See Figure 2) shows how the relationship between the amount bet and the average mutual trust is pretty linear. The correlation coefficient is 0.8458

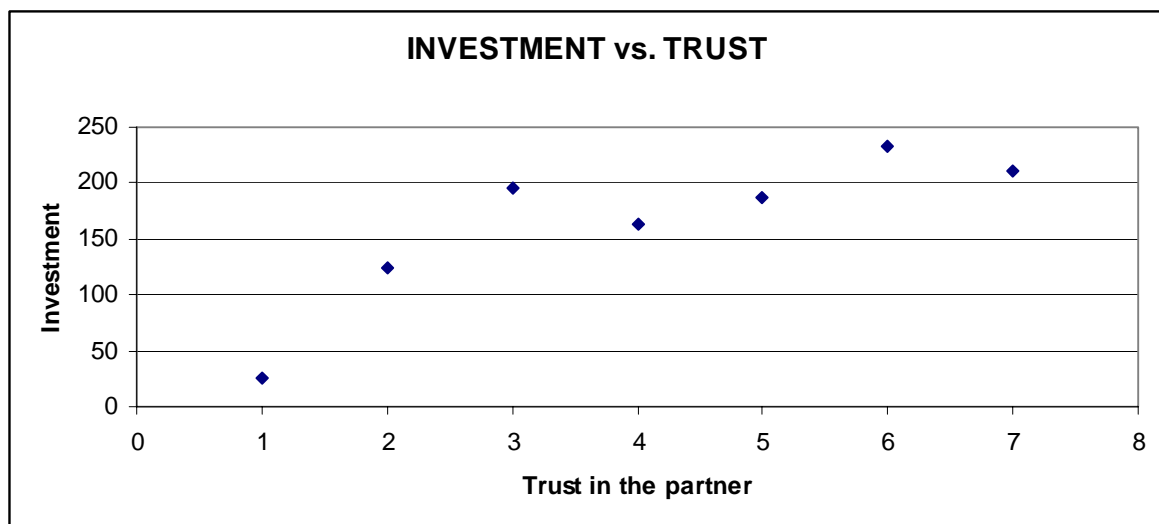


Figure 2: Investment versus Trust in the partner

Therefore we observe a positive correlation between the level of trust in the partner and the amount invested in the joint construction; H2 is confirmed by our data.

## 7. Discussion

Our results suggest that the level of trust in a business partner has a positive influence on the level of investment that an economic agent is willing to make when entering a joint development.

On the other hand, the role of trust on the creative outcome of a joint development is not as clear since it seems to peak at a certain value of trust in the partner, and to decrease beyond this threshold.

To explain this pattern, we can refer to the theoretical framework analysing the role of conflicts on team performance (see, for instance, Amason, 1996; Jehn & Mannix, 2001). According to these authors, tension is not always negative in a team. While relational conflicts are extremely detrimental to team performance, task oriented conflicts are beneficial. A possible interpretation of our finding could be that low levels of trust cause relational conflicts which are known to be detrimental to coordination, while high levels of trust may induce a reduction in task oriented conflicts which are beneficial to the creativity.

According to this analysis, participants distrusting each other would experience relational conflicts preventing them from working together efficiently. If, on the other hand, the level of trust is very high, individuals might become too accommodating, thereby quickly accepting their partner's ideas and thus reducing the level of task oriented conflicts resulting in a lower creative tension, and consequently reducing the effectiveness of the partnership.

The managerial implications seem quite clear. As business partners form a joint-team for work on a co-development project, they must ensure that trust among team members is present. This is beneficial both to the "commitment" of teams to the joint-success (hypothesis 1: strong correlation between trust and investment), but also, to some extent, to the joint-creativity. This calls for the need to help team members, of both organizations involved in the co-development, with appropriate methodologies to build trust. Effective tools do exist in this domain, such as the so-called "FAcT Mirror" (Le Cardinal, Guyonnet, Pouzoullic & Rigby 2001).

There is indeed a risk of excessive trust, but it only appears at a relatively high level of trust, because it might result in somewhat lower levels of creativity. It is,

however, unclear what type of trust would cause creativity to decline. Could it be reached after a short team building exercise? Or is it much higher such as, for instance, trust between close friends which is unlikely to arise through traditional team building exercises? More research must definitely be devoted to exploring how much trust is too much, and to what extent it would cause a reduction in the joint-creativity.

## **8. Conclusion**

In this article we have presented a research design that, combining two questionnaires and one experiment, aims at measuring the impact of trust between partners collaborating on creative joint developments. The main purpose of the tool is to derive key observations that can possibly be translated into recommendations for managers involved in partnerships with external companies.

The analysis of our results shows that (H2) a higher level of trust in the partner induces a higher level of investment in the partnership. However, it is not always true that (H1) the higher the trust between two individuals, the higher the creativity gains; our data show that there seems to be a level of trust that maximizes the outcome of the creativity oriented joint task. We have simulated our data with a downward parabolic curve that fits significantly the results of the experiment.

The major managerial implication is that companies involved in innovative joint developments should seek trustful business partners to maximize their chances of success, but exercise caution when it comes to the creativity phase involved in innovative development. At that stage, managers should be aware of the risk of incurring in a less than optimum development if the trust level among the individuals involved in the joint-development is too high.

In closing, we would like to acknowledge some of the limitations of our research. The major one, at this point, is the limited number of dyads studied to collect the data used in our analysis. The small size of our data set made it very difficult to find compelling results on the basis of primary data. We had to resort to aggregate data (average level of creativity effectiveness) to make the pattern observed more visible. We are conscious that, in the process, we reduce a great deal of the

variance among dyads. With a larger population, we hope we can demonstrate the same pattern at the dyad level.

We believe that the experimental tool is robust enough to allow large scale exploitation. An adequate number of sessions will also allow us to conduct some comparative analysis across countries, seniority of participants, educational backgrounds and other demographic characteristics. Through future rounds of this experiment, we therefore expect to further clarify the role of trust on joint creativity and investment behaviors. Our research also suffers from some methodological weaknesses due, in particular, to the difficulty of monitoring a large number of participants playing simultaneously (up to 30 participants, and 15 dyads). In spite of our best efforts to monitor the behaviors of participants (such as checking that players do not communicate), we cannot be assured that no collusion between teams ever happened.

The preliminary findings of our research deserve, however, some attention from scholars interested in R&D management as well as from R&D executives and managers engaged in setting up joint-development teams as part of their technological innovation activities. We hope that further use of our experimental tool, as well as the exploitation of other portions of our data set will allow us to provide more detailed understanding of the influence of trust in creativity oriented joint-developments.

## Bibliography

- Amabile, T.M., Conti, R., Coon, H., Lazenby, J. & Herron, M. (1996) Assessing the Work Environment for Creativity. *Academy of Management Journal*, 39(5), 1154-1184.
- Amason, A.C. (1996) Distinguishing the effects of functional and dysfunctional conflict on strategic decision making: resolving a paradox for top management teams. *Academy of Management Journal*, 39(1), 123-148
- Special issue of the *Academy of Management Review* (1998) 23(3).
- Ariño, A., de la Torre, J. & Ring, P.S. (2001) Relational Quality: Managing Trust In Corporate Alliances. *California Management Review*, 44(1), 109-131.
- Berg, J., Dickhaut, J. & McCabe, K. (1995) Trust, Reciprocity, and Social History, *Games and Economic Behavior*, X, 122-142
- Bidault, F., de la Torre, J., de Rham, C. & Sisto, M. (2007) What Makes Executives Trust Each Other? The determinants of the Willingness to Rely on Trust in Business Partnerships. *Creativity and Innovation Management*, forthcoming, September 2007.
- Bstieler, L. (2006) Trust Formation in Collaborative New Product Development. *The Journal of Product Innovation Management*, 23, 56-72.
- Carnevale, P.J., & Probst, T.M. (1998) Social values and social conflict in creative problem solving and categorization. *Journal of Personality and Social Psychology*, 74, 1300-1309.
- Carson, S.J., Madhok, A., & Wu, T. (2006) Uncertainty, opportunism, and governance: The effects of volatility and ambiguity on formal and relational contracting. *Academy of Management Journal*, 49, 1058-1077.
- Chen, M.H., Chang, Y.C., & Hung, S.C. (2008) Social capital and creativity in R&D project teams. *R&D Management*, 38(1), 21-34.
- Cullen, J.B., Johnson, J.L. & Sakano, T. (2000) Success Through Commitment And Trust: The Soft Side Of Strategic Alliance Management. *Journal of World Business*, 35(3), 223-240.
- Dakhli, M. & De Clercq, D. (2004) Human capital, social capital, and innovation: a multi-country study
- De Clercq, D., Thongpapanl, N.T. & Dimov, D. (2007) The role of conflict and social capital in cross-functional collaboration, proceedings of the 4th Workshop on Trust Within and Between Organizations, Amsterdam, October 2007
- Dodgson M. (1992) The Strategic Management of R&D Collaboration. *Technology Analysis & Strategic Management*, 4(3), 227-244.

- Dyer J. & Hatch H. (2004) Using Supplier Networks to Learn Faster, *MIT Sloan Management Review*, Spring, 57-63
- Forrest, J.E. & Martin, M.J.C. (1992) Strategic Alliances between Large and Small Research Intensive Organizations: Experiences in the Biotechnology Industry. *R&D Management*, 22(1), 41-53.
- Glaeser, E.L., Laibson, D.I., Scheinkman, J.A. & Soutter, C.L. (2000) Measuring Trust. *The quarterly Journal of Economics*, 115(3), 811-846.
- Gulati, R. (1995) Does Familiarity Breed Trust? The Implications Of Repeated Ties For Contractual Choice In Alliance. *Academy Of Management Journal*, 38(1), 85-112.
- Hagedoorn J. (1993) Understanding the Rationale of Strategic Technology Partnering: Interorganizational Modes of Cooperation and Sectoral Differences, *Strategic Management Journal*, 14(5), 371-385
- Hagedoorn, J. & Duysters, G., (2002) External Sources of Innovative Capabilities: the Preference for Strategic Alliances or Mergers and Acquisitions. *Journal of Management Studies*, 39(2), 167-188.
- Heimeriks, K. (2002) Alliance capability, collaboration quality, and alliance performance: an integrated framework. Eindhoven Centre for Innovation Studies, Working Paper 02.05.
- Jagersma, P.K. (2005) Cross-Border Alliances: advice from the executive suite. *Journal of Business Strategy*, 26(1), 41-50.
- Jehn, K.A. & Mannix, E.A. (2001) The dynamic nature of conflict: a longitudinal study of intragroup conflict and group performance. *Academy of Management Journal*, 44(2), 238-251
- Jehn, K.A. (1995) A Multimethod examination of the benefits and detriments of intragroup conflict. *Administrative Science Quarterly*, 40, 256-282.
- Kelly, M.J., Schaan, J.-L. & Joncas, H. (2002) Managing Alliance Relationships: Key Challenges in the Early Stages of Collaboration. *R&D Management*, 32(1), 11-22.
- Kumar, N (1996) The Power of Trust in Manufacturer-Retailer Relationships, *Harvard Business Review*, 74(6), 92-106
- Koza, M.P. & Lewin, A.Y. (1998) The Co-Evolution of Strategic Alliances. *Organization Science*, 9, 255-264.
- Krishan, R., Martin, X. & Nooderhaven, N. (2006) When Does Trust Matter to Alliance Performance? *Academy of Management Journal*, 49(5), 894-917
- Le Cardinal, G., Guyonnet, J-F., Pouzoullic B. & Rigby J. (2001) Intervention methodology for complex problems: the FacT Mirror method, *European Journal of Operational Research*, 132, 694-702

- Littler D., Leverick F. & Bruce M. (1995) Factors Affecting the Process of Collaborative Product Development: A Study of UK Manufacturers of Information and Communications Technology Products, *Journal of Product Innovation Management*, 12(1), 16-23
- Luo, X., Rindfleisch, A. & Tse D.K. (2007) Working with Rivals: The Impact of Competitor Alliances on Financial Performance. *Journal of Marketing Research*, 44, 73-83.
- Mayer, R.C., Davis, J.H., & Schoorman, F.D. (1995) An integrative model of organizational trust, *Academy of Management Review*, 20, 709-734
- Miller, A.S. & Mitamura, T. (2003) Are Surveys on Trust Trustworthy? *Social Psychology Quarterly*, 66(1), 62-70.
- Möllering, G. (2006) Trust: Reason, Routine, Reflexivity. Oxford Elsevier.
- Ross, J.A. (2006) Trust Makes the Team Go'Round. *Harvard Management Update*, 11(6), 3-6.
- Rousseau, D.M., Sitkin, S.B., Burt, R.S. & Camerer, C. (1998) Not so Different After All: a Cross-Discipline View of Trust. *Academy of Management Review*, 23(3), 393-404.
- Sako, M. (1992) Prices, Quality and Trust: Inter-firm Relations in Britain and Japan. Cambridge University Press, Cambridge, UK.
- Schumacher, C. (2006) Trust – A Source of Success in Strategic Alliances? *Schmalenbach Business Review*, 58(3), 259-278.
- Sicotte, H. & Préfontaine, L. (1997) Performance Factors Of International R&D Projects. *Proceedings of Portland International Conference on Management and Technology*, 27(1), 964 – 968.
- Simons, T. & Peterson, R. (2000) Task conflict and relationship conflict in top management teams: the pivotal role of intragroup trust. *Journal of Applied Psychology*, 85, 102-111.
- Stuart, T. (2000) Interorganizational alliances and the performance of firms: A study of growth and innovation rates in a high-technology industry. *Strategic Management Journal*. 21, 791–811.
- West, M.A. & Anderson, N.R. (1996) Innovation in top management groups. *Journal of Applied Psychology*, 81, 680-693.
- Woodman, R.W., Sawyer, J.E. & Griffin, R.W. (1993) Toward a theory of organizational creativity. *Academy of Management Review*, 18, 293-321.
- Zaheer, A., McEvily, B. & Perrone, V. (1998) Does Trust Matter? Exploring the Effects of Interorganizational and Interpersonal Trust on Performance. *Organization Science*, 9(2), 141-159.

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