Applied Studies in Agribusiness and Commerce – APSTRACT
Agroinform Publishing House, Budapest

Co-innovation: what are the success factors?[1]

Harry Bremmers[a*] & Anna Sabidussi[b]

[a.] *Associate professor Business Administration Group (WUR)*
[b.] *Assistant professor Business Administration group (WUR)*
[*] *Corresponding author Wageningen University Hollandseweg 1 6706KN Wageningen (NL)*
harry.bremmers@wur.nl

Abstract: The problem we address in this paper is that in projects focusing on public-private cooperation to stimulate innovation in the Netherlands, initiatives often lack continuation after the study-phase. We extracted possible influencing variables from business and (transaction) cost economic theorizing, stakeholder and capability theory. Moreover, we used measures for classifying projects with respect to financial interdependencies between participants. We supposed that project characteristics influence managerial behavior to continue or stop.

We studied 28 projects (20 supply chain projects and 8 biological product development projects). Our aim was to explore the barriers and success factors for these co-innovation projects: innovation as a cooperative effort between public sector/research institute and private organization(s).

We derived data from project descriptions and performed semi-structured interviews with project informants. Critical to success appears to be ex ante commitment of all parties. Goal congruence, both at a personal and a company level, and proportionality of sharing in project results are of decisive importance to establish such commitment. Estimations about financial project results should be made in an early stage; they should be used as a basis for negotiations on the (re)distribution of costs and benefits, especially if the value added is disproportionally distributed over the participants. Ideally, project teams of co-innovation projects should bring in complementary capabilities: technical, marketing, financial and organizational. Project governance should therefore be organized in such a way that the knowledge gaps are filled in before kick-off.

Key words: co-innovation, food industry, supply chains, investments

1. Introduction

Innovation is, as to J.A. Schumpeter and many others, the primary source for gaining and maintaining competitive advantage. This is especially true for the European food and drinks industry, which consists to a large extent of SMEs (companies with less than 250 employees). SMEs possibly experience barriers in continuous innovation because of lacking budgets, skills, competences and capabilities to systematically improve processes and products (*Teece* 1997; *Avermaete* et. al. 2004). SMEs account in Europe for about 50% of turnover, and include 99.1% of the total population of companies. The European Food and Drinks sector is the largest manufacturing sector in the EU, with a total turnover of € 836 billion in 2005, which is 13.6% of total manufacturing turnover, and 3.8 million workers in 282,600 companies (CIAA, 2006, p.5). SMEs have a distinctive and important role to play in the diffusion of innovations into the market, and in some ways even are in advance compared with large firms (e.g., lack of bureaucracy, fast internal communication, informality and nearness to the consumer; *Freel,* 2008). Although there is abundant evidence that small firms innovate more than large firms, there is also the concern that innovation in the food and drinks industry lags behind. Organizational learning networks provide a relatively cheap device for capacity-building and acquiring complementary assets (*McGovern* 2006; *Powell* 1990). Learning networks can be built in cooperation with the government. If they are directed at innovation, the result will be a co-innovation structure. As pointed out by *Williams* (2003), innovation is associated with continuously undertaking projects. Managing projects has become a complicated task due to increasing technological complexity and time pressure. For this reason is it of extreme importance for companies to assess the success achieved (or the reasons of failure) of the projects they invested in. Learning is recognized as an essential process that stimulates the renewal of the firm's knowledge (*Lane and Lubatkin,* 1998). However, in order to "create knowledge", in the words of *Nonaka and Takeuchi* (1995) and to learn from projects (*Williams,* 2003), firms need to have a clear understanding of the mechanisms that lead to success or failure of innovation projects.

The problem we address in this paper is that co-innovation projects often lack continuation after the study-phase. The question is: what are the underlying factors that

[1] This paper was modified after being presented at the Continuous Innovation Conference, Valencia 2008.

lead to success or failure? The answer to this question is extremely important: it contributes to a learning process and will give ways to improve future supervision of co-innovation.

In this paper, success is defined (1) on a project level as the willingness to make (follow-up) investments and (2) on an individual level as (2) the satisfaction of the participants with the project results. The choice to use personal satisfaction and learning as key aspects that favors the willingness to undertake future cooperative efforts (*Gadstein* 1984, *Hoegl and Gemuenden* 2001). As already posed, innovation is a crucial factor for the survival of companies as well as of whole industrial sectors. Key factors that determine success can be located in the potential and perceived market opportunities, but also in the fit of initiatives to innovate with business structure and existent capabilities of firms (and therefore absence of exorbitant investment and transaction costs). The relevance of cooperative teams for successful innovation project results has been confirmed by several studies (*Hoegl and Gemuenden,* 2001). This article focuses on the (required) project attributes and managerial skills to make (co-) innovation a success. Expressed intentions to co-invest can be regarded as a sign of permanent commitment to common goals.

This paper is structured as follows, In § 2 the theoretical foundation is explained. § 3 contains the material and methods of this paper. In § 4 the results will be addressed. Finally, the conclusions and managerial implications are described in § 5.

2. Theoretical framework

Working in cooperation to innovate has become an imperative in an economy where firms' links are increasing in number and in relevance (*De Man,* 2004). To innovate, individual efforts alone are not sufficient and the use of partnerships has developed remarkably in the last years (*Hagedoorn* 2002). That cooperation as an essential ingredient for innovation performance has been widely recognized in the innovation management literature.

Working in teams has been recognized as one of the critical success factors that can foster the levels of innovation at the firm level (*Cooper and Kleinschmidt,* 1995). However, the literature has paid little attention to define different measures of project success and to explore what drives the innovation achievements (*Hoegl and Gemuenden*, 2001). In their study, *Hoegl and Gemuenden* (2001) have conceptualized the success of innovation projects in teamwork under multiple dimensions. Those dimensions include, a) effectiveness, which refers to the quality of the outcome, b) efficiency, achieving the project 's goals within the time and the budget constraints imposed c) work satisfaction, indicating the personal fulfillment and the willingness to undertake new projects in the future, and, d) learning, the acquisition of new knowledge. The above aspects have been proven to be related to the quality of teamwork.

The factors that have an influence on the success of projects are related to the second part of the present study. There is a great variety of aspects that can support or inhibit the results of co-innovation projects, spreading from the role of individual characters of team members to more general aspects like the organization of the team work (*Pinto* et al. 1993). Especially when cross-functional teams are involved in an innovation project, four factors have been identified as stimulating the team cooperation and the project's success. Those factors include the clear definition and commitment to a goal, the existence of rules and procedures for coordinating the team activities and tasks, the proximity of the personnel involved in the cooperation and the accessibility related to the rate and regularity of the communication within the team (*Pinto* et al. 1993). Remarkably, perceptions about the determinants and the consequences of cooperative teams are similar in different departments like R&D, marketing or manufacturing: In all cases managerial direction and support has been perceived as essential for the success of the cooperative project (*Song* et al. 1997).

In the present work the above literature is expanded to take into account the investments associated with the innovation project. To explain the project results in terms of satisfaction of participants and their inclination to invest, we make a distinction between the following groups of variables:

- perceived costs and benefits (§ 2.2);
- stakeholder norms and support (§ 2.3);
- controllability: the ability of the participants to carry out the project (§ 2.4).

We use the 'characteristics of the investment project', especially dependency and result distribution, as factors which influence the behavioral variables as presented in § 2.2–§ 2.4; these in turn are supposed to influence the level of satisfaction with project outcomes, and thus the willingness to continue.

2.1 Investment Project Specifics

Investments are the result of complex decision processes. This is contrary to the common notion that investing depends on calculating the present value of future, predictable, cash flows (*Sauner-Leroy* 2004). Asset-specificity and irreversibility of investments, environmental dynamism and uncertainty, make committing to joint investment activities a risky matter. As to *Sauner-Leroy* (2004), irreversibility causes "irredeemable and asymmetric cost of desinvestment", and the cut-off of strategic alternatives. Being locked into a particular investment makes the project partners vulnerable to opportunism (*Williamson* 1975, 1985). We discern *investment dependency* and *value dependency*. With investment dependency the situation is depicted in which more than one party has to make investments to make the project a success. Value dependency is often the result of investment dependency: no participant can cash the added value on his own. Value dependency occurs at the output side, while investment dependency is located at the input-

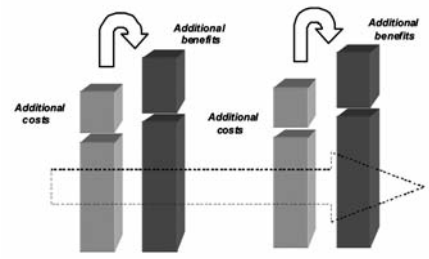

Figure 1a. Example of independence and proportional distribution of value added. Project: "Energy reduction in the pork chain".

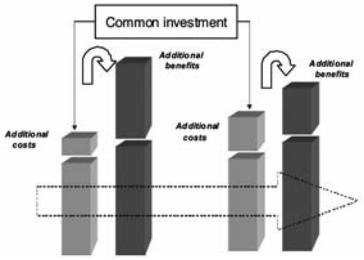

Figure 1b. Example of dependence and disproportional distribution of the value added. Project: "Easy slurry system"

Source: *Bremmers & Broens* 2008; details on: www.akk.nl

side of a project. Dependencies are binding forces for the participants, because they cannot easily opt out once a commitment has been made. However, they could also be exploited in an opportunistic way. This is especially true in case of, what we call, *value displacement* (*Broens and Bremmers* 2007). Value displacement occurs if (extra) efforts by one partner in a (co-)innovation project cause extra benefits for someone else, and vice versa. A perceived lack of fairness of the initial distribution of project advantages can be mended by negotiating on a redistribution scheme. To establish an acceptable scheme, trust between the partners is of viable importance. The categories we use to characterize projects are visualized in figures 1a and 1b.

A perceived des-equilibrium in outcome distribution is deepened by environmental and accounting uncertainty. With environmental uncertainty we refer to a lack of predictability of market success of an investment project. Accounting uncertainty refers to the lack objective (financial) measures and/or skills to calculate expected project outcomes. Moreover, the financial criteria which are used by partners can be different; probably they will use accrual accounting techniques (like activity based costing) instead of more transparent cash accounting techniques. The resulting asymmetric distribution of information can infringe on the willingness to invest. Tacit assets and benefits, the absence of benchmarks and/or negative projections for the first years of a project can deepen feelings of uncertainty and fear of opportunism. Trust can compensate for the lack of transparency. Trust depends on past (positive) experiences, the duration of the relationship, the relative – in proportion to total investments – size of the investment, and the availability of investment alternatives (which provide opportunities to opt-out).

The investment characteristics affect three clusters of variables which explain behavioral intentions: the attitude (perceived and expected costs and benefits), the normative environment of the decision maker and the level of perceived controllability (*Ajzen* 1991). In our view these primarily psychological variables can be interpreted from a managerial perspective as being related to (transaction) economic theory, stakeholder theory and dynamic capability approach (which, in turn, finds its roots in the resource based view; compare: *Amit & Schoemaker* 1993; *Barney* 1991; *Wernerfelt* 1984). The (psychological) theory of planned behavior (*Ajzen* 1991) serves to bring these theories together in an integrated framework.

2.2 Explaining Investment Decisions: Costs and Benefits

The model we use explains the decision making processes in co-innovation processes from the following categories: *attitude* (perception of competitive advantage (positive, *Porter* 1980; 1981) and cost and risk awareness (negative; *Masten* 1993), *subjective norms* and *controllability* (available budgets, size of the organization, existing competences, previous experience with innovation etc.). The attitude towards a project is the result of a personal 'cost-benefit analysis', of the expected results of certain actions (*Tonglet* et al., 2004). Such a cost-benefit analysis is made constantly in "go-nogo"-decisions by project participants. The positive side of co-innovation is the expected increase of the participant's net cash flows; in symbols:

$$p^* \frac{\sum CF}{\delta N}$$

In which: CF = Cash Flows, N = the number of firms, p is the probability of success, and stands for a 'disproportionality parameter'[2]. The 'fit' of a project in the individual firms' strategy is possibly an important factor influencing the expected net-cash-flows. Prospector firms (Miles *et al.* 1978) will focus on product innovation, while defender firms will be more reluctant to accept completely new (product) innovations.

The negative consequences of joint investments are measured as $\frac{I}{\alpha N} + \frac{\beta(N)}{\gamma} TC$

The first part of the equation indicates that joint investment cash-outflows are split up over more than one project partner (N). The factor denotes the share individual partners take in the total initial investment (I). The second part refers to the additional relational transaction costs (TC, costs of contracting, monitoring and control; see *Rindfleisch and Heide* 1997; *Williamson* 1998), which will reduce the net benefit of a partnership. Individual (Transaction) Costs will be lower ($1/\gamma$) with the ability to share such costs and will increase the wider the network stretches ($\beta_{(N)}$). Transaction cost reasoning addresses the problem of how costs of transacting influence the choice between exchange in a hierarchy (vertically integrated organization) and spot exchange (market), as well as hybrids (alliances, joint

2 Indicating a more or less than proportional share of total positive cash flows to individual partners out of the project, in case of value dependency and displacement

ventures etc.) are made, from a *cost* perspective. Hierarchies (integration, in our case: cooperation) in the co-innovation projects, cause bureaucratic costs. Key dimensions of governance like asset specificity (dependence), asymmetrically distributed information and uncertainty can create space for opportunistic behaviour, so that 'competition' (stand-alone investment) over cooperation (co-innovation) is preferred (compare: *David and Han* 2004; *Geyskens* et al. 2006; *Poppo & Zenger* 1998, 2002).

2.3 Stakeholder Norms

The network in which the project organization is embedded plays a definite role in the decision making process and project evaluation. Primary stakeholders are fellow-companies, research institutes/public agencies as well as strategic (top) management. They provide norms and support for actions (i.e., project involvement (*Dirsmith and Covaleski* 1983). Norms to behave in a certain way are not only extracted from the business environment, but also from the home organization. Without support from top-management, a double round of project-approval would be necessary: one within the project team and another at the home-office. Should a strategic fit between project delegate and home office be lacking, the initiative will be abandoned at the latest when real investments have to be made.

2.4 Control

Control is the *ability* to behave as is intended. Past experiences with partners in similar projects will contribute to the perception of control (i.e., will reduce perceptions of risk and uncertainty). The availability of the necessary assets, competences and capabilities improves the chances for success of the project. As to the resource based view, companies distinguish themselves from competitors by the specific, hard-to-imitate, valuable assets they possess (*Barney* 1991). Such assets can be physical (machinery), intellectual (knowledge base), social (networks) and organizational (procedures, systems) of a kind. The dynamic capability approach is an extension of the resource based view (*Teece* et al. 1997; *Newbert* 2005). Capabilities are tacit assets (routines) which make firms able to strategically come up to environmental challenges. Investments which are complementary to existing routines will be adopted more easily than 'alien' investment options. The existing assets form a 'frozen memory' of stakeholder wishes from the past. However, available routines of action and interpretation, of skills and competences, could also obstruct a clear vision on radical innovation options (*Gersick and Hackman,* 1990). We suppose that available routines (built by experience) facilitate new innovations, especially in prospector firms which have acquired the capabilities to creatively deal with complex learning and unlearning processes (compare: *Lybaert,* 1998, in: *Freel* 2008).

2.5 Research Model

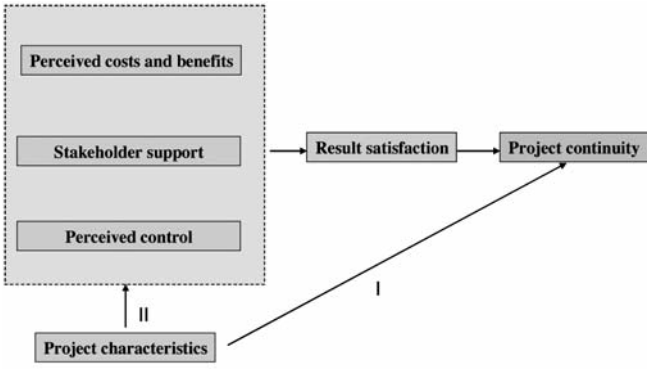

Figure 2. Research model

On the basis of the exposure of the theoretical foundations, the research model in figure 2 can be formulated. In the analysis of the first sample of 20 supply chain projects (I) (*Bremmers & Broens* 2008), a direct relationship between project characteristics and project continuity was observed. The results have been described and were used to build a decision making tool for project management[3]. A key conclusion in study (I) was that in projects with dependency and value displacement, ex ante measurement of probable project outcomes and the design of a fair redistribution system contributes to project continuity. If not, such projects often come to a halt after the initial research phase (the phase in which the research institute is participating). Focusing on co-innovation projects, a second sample (II) was used to explain the level of project satisfaction by means of costs and benefits, stakeholder influences and control, to deepen the findings and triangulate the results.

3. Material and methods

The second sample comprised of 8 co-innovation projects (subsidized by the Dutch Ministry LNV and carried out in the period 2005–2007). The projects are summarized in table 1.

Table 1. Co-innovation projects

	Title of project	Supply chain partners
A	Dairy innovation	4
B	Fruit Innovation	4
C	Juice innovation	3
D	Vegetable species	3
E	Flower Innovation	3
F	Soft drinks	4
G	Chicken	3
H	Vegetables	4

3 A CD-rom with the results and a management tool (in Dutch) are attainable at SenterNovem (The Netherlands); www.SenterNovem.nl

Table 2. Operationalization, means and standard deviations (STD)

Question	***Code***	***Theoretical support***	***Mean***	***STD***
Costs and benefits (attitude)		***(Transaction) cost economics***	7-point scale (1 = low, 7 = high)	
The participants were at the start convinced of the success of the project	**Convinc**	lack of expected success (uncertainty) causes low levels of project integration (vv)	4.88	1.356
The project is important for attaining the participant's business goals	**Import**	high levels of goal convergence increases the willingness to invest.	3.75	1.389
The participants perceived the advantages of the project to be distributed fairly	**Fair**	experienced fairness will reduce opportunistic behavior and the necessity to monitor and control.	4.13	1.246
Stakeholders (normative environment)		***Stakeholder theory***	***Mean***	***STD***
The private goals of the participants in the project converged	**Fair**	experienced fairness will reduce opportunistic to common projects (vv)	4.63	2.326
The opinion about the direction of the project converged	**Opinion**	homogeneity of stakeholder strategies leads to commitment in common projects (vv)	4.38	1.768
The top-management of the firms supported the project from the beginning	**Commit**	support from stakeholders/superiors leads to commitment in common projects	4.38	2.134
Capabilities (control)		***Dynamic capabilities approach***	***Mean***	***STD***
The participants have experience with the type of project activities that are expected	**Experience**	Similar activities in the past improve the capabilities that make the project a success	4.25	1.909
The composition of the project team was ideal for this project	**Ideal**	Complementary capabilities improve project control	4.25	2.252
The advantages and disadvantages for the participants were known at the start of the project	**Division**	Higher predictability by assessing probable benefits and costs (planning capabilities)	2.50	1.309

The information on the characteristics and outcomes of the projects was derived from official reports and from a semi-structured interview with a key informant that was unaware of our theoretical framework. A questionnaire was designed to structure the information. Most questions were designed as Likert 7-point scales. The following questions were asked with respect to the three behavioral categories (table 2). Levels of dependency and value displacement were measured.

4. Results

4.1 Structural Project Characteristics

All projects focus to some extent on product- and/or market development. In all projects the improvement of efficiency is not the primary motive for cooperation. To check this, we posed the statement: "The project has as a focus to supply products cheaper than competitors". The average score was only 1.63 (STD = 0.756). All are primarily interested in product innovation, but in doing so will have to reorganize their supply chain. This is least the case in the Fruit Innovation project, as the introduced berries were already available; the project focused on harvesting and setting up a domestic supply chain. All projects combine product- and/or market development with a high grade of knowledge acquisition. Special dominance of one of the project participants was found in projects B, C, D, F and G, which could influence a fair distribution of project results. The Juice as well as the Fruit Innovation project had as a special characteristic that the project teams only consisted of top-management, which provided support ex ante. The Dairy Innovation case (A) was characterized with high value displacement. Value displacement was also characteristic for the Fruit Innovation project. However, investment dependency was so high in this project, that there is a locked-in situation which gives solid ground for negotiations on the redistribution of project results. The absence of cost focus, combined with the technological expertise – to a large extent – of the project team members explains the lack of ex ante estimations of possible costs and benefits.

4.2 Correlation Matrix

To get an idea about the influence of identified factors on project satisfaction, Spearman rank correlations were calculated (see table 3).

Table 3. Explaining participant satisfaction

	CONVINC	IMPORT	FAIR	CONJOINT	OPINION	IDEAL	ADVANTAGE	EXPERIENCE	VALUE DISPLACEMENT	DEPENDENCY
CONVINC	1.000									
IMPORT	-0.04	11.000								
FAIR	0.869**	0.171	1.000							
CONJOINT	0.847**	0.246	0.932**	1.000						
OPINION	0.934**	0.040	0.796*	0.850**	1.000					
IDEAL	0.922**	0.066	0.905**	0.932**	0.892**	1.000				
ADVANTAGE	0.673	0.366	0.816*	0.870**	0.750*	0.802*	1.000			
EXPERIENCE	0.574	0.372	0.455	0.606	0.784*	0.650	0.722*	1.000		
VALUE DISPLACEMENT	0.525	0.448	0.410	0.640	0.751*	0.592	0.642	0.932**	1.000	
DEPENDENCY	0.588	0.459	0.497	0.585	0.788	0.590	0.704	0.956	0.891**	1.00 0
SATISFIE	0.901**	0.172	0.904**	0.882**	0.891**	0.943**	0.892**	0.719*	0.589	0.713*

** Correlation is significant at the 0.01 level (2-tailed); * Correlation is significant at the 0.05 level (2-tailed).

The results in table 3 should be interpreted in relation with previous and desk research, given the danger of multi-collinearity and common method bias. Table 3 shows, that value displacement and the project satisfaction level are not significantly associated (which is in line with our theoretical foundation). However, there seems to be no significant relationship between the satisfaction level and the importance of the project from a individual businesses' standpoint. Possibly, participants value project outcomes on other criteria than by looking solely at single business goal attainment.

4.2 Measuring Project Results and Barriers

We asked the participants to rank the main *barriers* (assigning 1 = very important and 7 = least important) of investing and continuing the project in the future. Lack of organizing capabilities scores highest, while absent transparency of results and lack of financial means on average take in the next ranks. Absence of knowledge of financial outcomes is a significant barrier, but the participants do not (know how to) fill in the knowledge gap: they just do not systematically apply financial criteria for project feasibility assessment (see table 4).

Table 4. Result measurement

For the ex ante projection of results of the project is used: (ranking from 1 = very important, to 7 = not important at all)	**Average rank**	**STD**
Knowledge from previous experience	3.625	1.768
Pay back period	5.875	0.354
Profitability of the project	4.500	0.756
Cash streams provoked by the project	7.000	0.000
Technical feasibility	1.500	0.535
Positive effects for customers	2.250	1.035
Positive effects for the business network	3.250	0.886

Table 4 shows that technical feasibility is ranked first as a result indicator. The expected benefits for customers scores second. Financial indicators (pay-back period, profitability and cash flow) are ranked lowest on average. This is surprising in the light of the barriers of success which were identified. Not only uncertainty about the project results, but also uncertainty about the division of costs & benefits over project participants will influence project continuation. We asked whether the participants were sure in advance how project costs and benefits would be divided. Not surprising anymore, the score appeared to be very low (mean = 2.500, STD = 1.309), with the lowest score for the Dairy Innovation project (A) and the highest in Juices (C) and Vegetable Species (D). It should be noted that past experience and trust between the participants in the Vegetable Species project were high, so that sound measures could be applied to split-up the potential profits.

4.6 Project Continuation and Success

We asked the participants to assess the success of the projects as well as the willingness to invest in the project on a 7-point scale (1 = very low, 7 = very high). The results are included in table 5.

Table 5. Project success and continuation

	Title of project	**success**	**continuation**
A	Dairy Innovation	3	3
B	Fruit Innovation	5	6
C	Juice innovation	6	7
D	Vegetable species	7	7
E	Flower Innovation	4	4
F	Soft Drinks	6	5
G	Chicken project	4	4
H	Vegetables	5	5

Obviously, the Dairy Innovation project (A) is rated lowest while the Vegetable Species project (D) is rated highest. What are then the similarities and fundamental differences in the characteristics of these two?

5. Conclusions and Managerial Implications

The following summarizing overview reveals remarkable differences between the Dairy Innovation project (A) and the Vegetable Species (D) project.

Table 6. Key differences between a successful and an unsuccessful

project	**A**	**D**
Project specifics		
Investment dependency	**1.5**	**6.5**
Value displacement	**4**	**6**
Costs and benefits (attitude)		
Convinc	**3**	**6**
Import	**2**	**5**
Fair	**2**	**6**
Stakeholders (normative environment)		
Conjoint	**1**	**7**
Opinion	**2**	**6**
Commit	**3**	**7**
Capabilities		
Experience	**2**	**6**
Ideal	**2**	**7**
Division	**1**	**4**

Investment dependency implicates that the partners will have to invest together, or not. The moment they invest, they are locked-in. In the Dairy Innovation project (A) with respect to the deployment of this production capacity there existed a situation we call value-independency. Moreover,

result-proportionality was low in the Dairy Innovation case (the results for each of the partners are disproportional to their efforts) and value displacement was high. Such a situation, combined with lacking joint experience from past projects, was probably a major cause for lower success than in project D. Built capabilities from past experiences enhanced a sense of solidarity in project D. Goal congruence, or the conditions to establish it, were also present in this project. Support from top-management and predetermined financial arrangements further strengthen the chances for success..

The projects show, in an explorative way, that fundamental conditions have to be met for co-innovation project success. We mention especially:

- goal congruence, both at a personal and a company level;
- investment and value dependency contributing to the willingness to cooperate, and, if value displacement occurs, redistribution schemes should be available;
- unanimity on the project goals and strategy reached in the early stages of the project.

The absence of financial information on the outcomes of a project can lead to early abandonment, especially if uncertainty persists. It is a matter of sound project coordination and governance to urge participants to quantify the possible project outcomes and to make agreements on the distribution of costs and benefits. Governance of co-innovation projects requires skills and knowledge on three levels:

- technical knowledge, to be able to understand the context and aims of the project;
- knowledge of group processes to create an alignment of goals;
- advisory skills to guide project teams in the projection of expected outcomes and choosing between real options;
- advisory skills to guide project teams in the process of negotiating on the redistribution of project outcomes if proportionality is lacking.

Ideally, project teams of co-innovation projects share different capabilities: technical, marketing, financial and organizational. In practice however, technical capabilities dominated in many cases, leading to project failure. It is a matter of good project governance to fill in knowledge gaps before kick-off, to avoid break-off and disappointment.

References

Ajzen, I. (1991): The theory of planned behavior *Organizational Behavior and Human Decision Processes*, Vol. 50, pp 179–211.

Amit, R., & Schoemaker, P.J.H. (1993): Strategic assets and organizational rent *Strategic Management Journal*, Vol. 14, pp 33–46.

Avermaete, T., Viaene, J., Morgan, E.J. with Pitts, E., Crawford, N., Mahon, D. (2004): Determinants of product and process innovation in small food manufacturing firms. *Trends in Food Science & Technology,* Vol. 15, pp 474–483.

Barney, J. (1991): Firm resources and sustained competitive advantage *Journal of Management*, Vol. 17 No. 1, pp 99–120.

Beckeman, M. & Skjöldebrand, Chr. (2006): Clusters/networks promote food innovations *Journal of Food Engineering,* Vol. 79, pp 1418–1425.

Broens, D.F. & Bremmers, H.J. (2007): *What's in it for me?* Utrecht: SenterNovem.

Bremmers, H.J. & Broens, D-F (2008): Why are supply chain projects (not) successful? *Proceedings of the 8th CMC conference (J. Trienekens et al. eds.)*, Ede (NL).

CIAA (2006): *Data & Trends of the European Food and Drink Industry* Brussels: CIAA.

Cooper R.G. and Kleinschmidt E.J. (1995): Benchmarking for firm's critical success factors in new product development, Journal of Product Innovation Management, Vol 12, pp. 374–391.

David, R.J. & Han Sh-K (2004): A systematic assessment of the empirical support for transaction cost economics *Strategic Management Journal*, Vol. 25, pp 39–58.

De Man, A.P. (2004): *The network economy. Strategy, Structure and Management*. Cheltenham, UK-Northampton, MA, USA: Edward Elgar.

Dirsmith, M.W. & Covaleski (1983): Strategy, external communication and environmental context *Strategic Management Journal*, vol. 4, pp 137–151.

Eisenhardt, K.M., and Martin, J.A. (2000): Dynamic capabilities: What are they? *Strategic Management Journal*, Vol. 21, pp. 1105–21.

Freel, M.S. (2008): Barriers to product innovation in small manufacturing firms *International Small Business Journal,* Vol. 18 No. 2, pp 60–78.

Gadstein D.L. (1984): Groups in context: A model of task group effectiveness, *Administartive Science Qaurterly*, Vol. 29, pp. 499–517.

Geyskens, I., Steenkamp, J-B.E.M, Kumar, N. (2006): Make, buy, or ally: a transaction cost theory meta-analysis *Academy of Management Journal*, Vol. 49 No. 3, pp 519–543.

Hagedoorn J. (2002): Interfirm R&D partnerships: an overview of major trends and patterns since 1960, *Research Policy,* Vol. 31, pp. 477–492.

Hoegl M. and Gemuenden H.G. (2001): Teamwork quality and the success of Innovative projects: A theoretical concept and empirical evidence, *Organization Science*, Vol. 12, No. 4, pp. 435–449.

Lane P.J. amd Lubatkin M. (1998): Relative absorptive capacity and inter-organizational learning, *Strategic Management Journal,* Vol. 19, pp. 461–477.

Lybaert, N. (1998): The Information Use in a SME: Its Importance and Some Elements of Influence Small Business Economics, Vol. 10 No. 2, pp 171–191.

Masten, S.E. (1993): Transaction costs, mistakes and performance: assessing the importance of governance. Managerial and decision economics 14(2): 119–129.

Miles, R.E., Snow, C.C., Meyer, A.D., & Coleman Jr., H.J. (1978): Organizational strategy, structure and process *Academy of Management Review*, July, pp. 546–562.

McGovern, Ph. (2006): Learning networks as an aid to developing strategic capability among small and medium-sized enterprises: A case study from the Irish Polymer Industry. *Journal of Small Business Management*, Vol. 44 No. 2, pp 302–305.

Nonaka I and Takeuchi H. (1995): The Knowledge-creating company:How Japanese companies create the dynamics of Innovation, Oxford University Press: Oxford

Newbert, S.L. (2005): New firm formation: A dynamic capability perspective *Journal of Small Business Managemen*t, Vol. 43 No. 1, pp. 55–77.

Pinto M.B., Pinto J.K. and Prescott J.E. (1993): Antecedents and consequences of project team cross-functional cooperation, *Management Studies*, Vol.39, no. 10, pp. 1281–1297.

Poppo, L. & Zenger, T. (1998): Testing alternative theories of the firm: transaction cost, knowledge-based, and measurement explanations for make-or-buy decisions in information services *Strategic Management Journal*, Vol. 19 No. 9, pp 853–877.

Poppo L., & Zenger T. (2002): Do Formal Contracts and Relational Governance Function as Substitutes or Complements? *Strategic Management Journal*, Vol. 23 No.8, pp. 707–725.

Porter, M. E. (1980): *Competitive strategy: techniques for analyzing industries and competitors*. New York: Free Press.

Porter, M. E. (1981): The contributions of industrial organization to strategic management *Academy of Management Review, Vol.* 6, No. 4, pp 609–620.

Powell, W. W. (1990): Neither market nor hierarchy: network forms of organization *Research in Organizational Behavior*, Vol. 12, pp 295–336.

Rindfleisch A., & Heide J.B. (1997): Transaction cost analysis: past, present and future applications *Journal of Marketing*, Vol. 61, pp 30–54.

Song X.M. Montoya-Weiss M.M. and Schmidt J.B. (1997): Antecedents and consequences of cross-functional cooperation: a comparison of R&D, Manufacturing and Marketing perspectives, *Journal of Product Innovation Management*, Vol. 14, pp. 35–47.

Sauner-Leroy, J-B (2004): Managers and productive investment decisions: the impact of uncertainty and risk aversion. *Journal of small business management,* Vol. 42 No. 1, pp 1–18.

Svahn, S. & Westerlund, M. (2007): The modes of supply net management: a capability view *Supply Chain Management: An International Journal*, Vol. 12, No. 5, pp. 369–376.

Teece, D.J., Pisano, G. & Shuen, A. (1997): Dynamic capabilities and strategic management *Strategic Management Journal*, Vol. 18 No. 7, pp. 509–533.

Tonglet, M., Philips, P.S., Read, A.D. (2004): Using the Theory of Planned Behaviour to investigate the determinants of recycling behaviour: a case study from Brixworth, UK *Resources Conservation & recycling,* Vol. 41, pp. 191–214.

Wernerfelt, B. (1984): A resource-based view of the firm *Strategic Management Journal*, Vol. 5, pp 171-180.

Wolff, J.A., & Pett, T.L (2006): Small-firm performance: Modeling the role of product and process improvements. *Journal of Small Business Management,* Vol. 44 No. 2, pp 268–284.

Williams T. (2003): Learning form Projects, *The Journal of Operational Research,* Vol. 54, No. 5, pp. 443–451.

Williamson, O.E. (1975): *Markets and hierarchies, analysis and antitrust implications* New York: Free Press

Williamson, O.E. (1985): The economic institutions of capitalism. New York, Free Press.