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THE IMPORTANCE OF CORPORATE CULTURE IN COLLABORATIVE PRODUCT DESIGN

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1. Introduction

The increasing complexity of technologies and products, the necessity to integrate new know-how rapidly as well as the shortening of development cycle times are the present-day challenges for any company. It is unlikely that a company is able to accomplish all activities in the new product development (NPD) process itself. Therefore, companies introduce new organizational forms such as collaborations and networks.
Collaboration within the area of new product and process design is a way of preserving and increasing the competitive ability of any company. Although many companies collaborate with partners in the NPD process less than fifty percent of the cooperative ventures are successful for both partners[Harrigan 1998.]. Littler et al. point out that "... the downside of collaboration has been encountered by many of the participants. Over 40% of respondents expressed the view that, in their experience, collaboration makes product development more costly, more complicated, less efficient, more time consuming, and more difficult to control and manage." [Littler, et al. 1995] Other studies show similar results for different types of cooperative ventures, e.g. strategic alliances, joint ventures, etc. These problems can be explained by looking at the three elements of the management of a collaborative venture: strategy, structure and culture.

2. Management aspects of collaborative ventures

On the one hand, collaboration in product design opens up access to new competencies, on the other hand, it also generates additional management effort. As the R&D management then has to deal with internal and external management tasks, the complexity of its work increases. Only an integrated view of all three elements with special consideration of the cultural aspects will help to overcome the existing disadvantages. [Bleicher 1991.]summarizes the problems well, saying that in the set-up and realization of cooperations, many unequal and occasionally chaotic situations will develop, in which our existing management tools are hardly applicable.

Three elements have to be considered simultaneously in a cooperation: Business strategy has to answer the question whether a cooperation is opportune or not. Although there is a tendency to see cooperation as a means to solve any problem there are still tasks for in-house development. Organizational structures are an important factor as well. Depending on corporate strategy and complexity of the task there are several ways to form cooperations. The last, but decisive element is the corporate culture of the partners involved. Culture offers answers to questions such as why the outcome of a cooperation is bad, although all structural recommendations have been considered.

2.1 Strategic aspects

According to Quinn [Quinn 1998] a strategy is a pattern or plan that integrates an organization's major goals, policies, and action sequences into a cohesive whole. A well-formulated research and development strategy helps to marshal an organization's resources into a unique and viable way based on its relative internal competencies and shortcomings, anticipated changes in the environment, and contingent moves by intelligent opponents.

A good R&D strategy must always connect external chances with internal resources. Due to its inherent complexity, collaboration in NPD needs more resources than normal innovation projects. The team members have to work together actively in the cooperation. Furthermore, appropriate (project) management capacities must be available. Particularly these capacities are often lacking which then leads to negative results. A manager, who agrees to a cooperation in NPD, must also make an appropriate contribution himself. If he is not able to do so due to capacity reasons, he must provide an adequate replacement.

2.2 Structural aspects

The structural elements of a cooperation in new product development consist of two main areas: organizational processes and structures. As structural arrangements are manifold and will vary from project to project, only process aspects will be discussed.

In cooperative new product development the two essential processes are the cooperation process and the new product development process. Both processes together form the process of collaborative product development.

The easiest way to describe a collaboration between partners in new product development is a process with five phases: initiation, partner selection, setup, realization and evaluation (including termination or relaunch). Figure 1 shows the elements of the process.

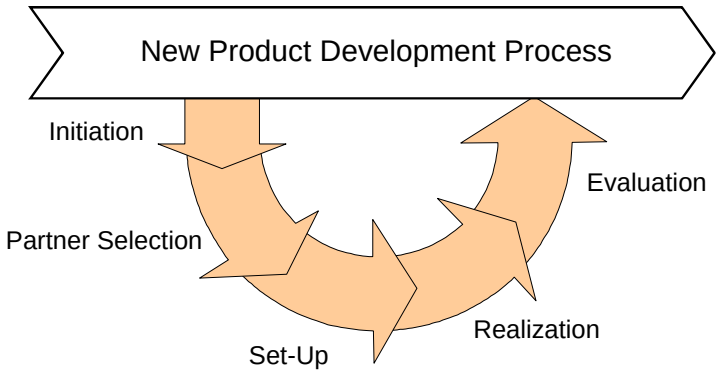

Figure 1. The collaboration process

In the initiation phase the management examines carefully the suitability of the strategic decision to collaborate. The partner selection focuses on finding the right company to work with. The set-up is the actual start of the project, where goals, structures and processes are defined. The realization deals with the day to day work. Common project management is applied. The last phase of the process is the evaluation, in which the success of the project and further action are determined. These five phases will later be used to explain the important effects of corporate culture in collaborative ventures.

2.3 Cultural aspects

Corporate culture plays a vital role in our day to day life in companies. Not only because they determine whether we like our work place or not but also because cultural issues influence the ability of an organisation to efficiently reach its goals. Corporate culture also determines in which way an organisation manages situations of conflict. A lot of different concepts have been introduced [e.g. Deal, et al. 1982 or O-Reilly, et al. 1996], but the most well known is the model by [Schein 1992.], which will be explained in the next chapter.

3. Schein's model of corporate culture

[Schein 1992.] defines the culture of a group as a "pattern of shared basic assumptions which the group learned as it solved its problems of external adaptation and internal integration, that has worked well enough to be considered valid and therefore, to be taught to new members as the correct way to perceive, think, and feel in relation to those problems." The following explanations are given according to this understanding of corporate culture. Schein's model consists of three levels of culture (Figure 2):

- *Artifacts*, which are visible organizational structures and processes (hard to decipher)
- *Espoused values*, such as philosophies (espoused justification)
- *Basic underlying assumptions*, which are unconscious, taken-for-granted beliefs, perceptions, thoughts and feelings (ultimate source of values and action)

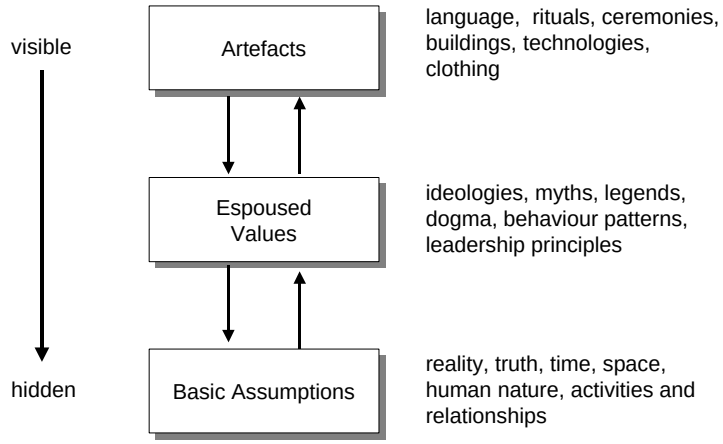

Figure 2. The model of corporate culture by Schein

Artifacts represent the surface of corporate culture, which include all the phenomena that one sees, hears and feels. They are the visible products of a group's culture, such as architecture, language, technology and products, clothing style, manners of address, etc. In the situation of cooperative new product development, this could also mean things like the frequency of communication or the top management involvement. Artifacts are usually hard to decipher, but easy to see.

All groups reflect someone's original *values*. When a group solves a problem successfully for the first time, the solution is most likely to reflect the values of a single person or a group, which is responsible for this success. Therefore these values will be picked up by the rest of the organization and will be used for further problem solving. Besides problem solving strategies and certain philosophies on how the world works, factors like the commitment to a cooperation or the willingness to bear risks are part of the espoused values.

When the problem solving strategies mentioned above work repeatedly they will be taken for granted. In this situation values become treated as a reality. This leads to the situation that any other 'reality' will be found inconceivable. *Basic underlying assumptions* can also be called theories-in-use. They are the result of the learning process of a group. Schein identified a set of six basic underlying assumptions: reality, truth, time, space as well as human nature, activities and relationships. All of these factors have several attitudes. In a collaborative venture in product design different attitudes to time, e.g. between the Far East and Europe, or in human activities, which manifest themselves in a 'doing-orientation' or a 'being-orientation', can be particularly problematic. In the next chapter these aspects of corporate culture will be applied along the collaboration process.

4. Corporate culture in the collaborative NPD process

As mentioned above organizational culture is one of the most important success factors in collaborative new product development. In a project financed by the commission for technology and innovation are survey was sent to 1500 companies in Switzerland and more than 350 companies answered. The main focus was to determine the state of the art of collaborative product development in the Swiss industry. One part of the questions in the survey focused on the success factors of this type of collaboration. In a section with open questions the R&D managers were asked to describe which factors influence the outcome of a collaboration. Not all persons answered all and some of these statements contained multiple answers. Approx. 51% of the statements dealt with cultural aspects, whereas strategic aspects were mentioned in 33% of the answers. Only 16% of the answers were related to structural aspects of a collaboration. If the cultural statements are examined in further detail, the results also show that aspects of interpersonal and inter-organisational relationship (44%) are more important than most of the others together (figure 3).

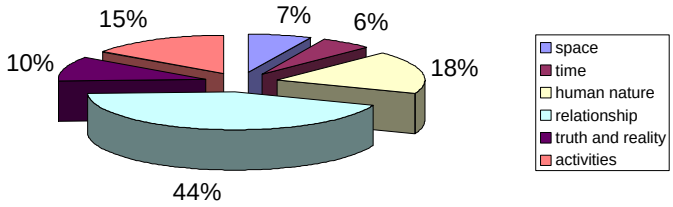

Figure 3. Aspects of corporate culture

Therefore the recommendations drawn from this results mainly focus on relationship aspects of the collaboration. Nonetheless the others are important as well and will be mentioned in phase where they are applicable.

4.1 Initiation

One of the main aspects in the first phase is that all partners know their own corporate culture. Assessing corporate culture is a complex task. Identifying the basic underlying assumptions for each partner means intensive work and it is suggested that the first step is a quick screening of cultural aspects. Taken from a corporate culture audit [Bristow ,et al. 1994.] the following questions could give a first insight into corporate culture:

Table 1. Questions to analyze corporate culture

? Tell me about yourself. What work do you do here? How long have you been here? ? What does this company really well? ? What type of person fits in here? ? How does this company differ from other companies you have worked for? ? What do you have to do to get fired in this company?	? Who makes things happen in here and why? ? Have there been any major crisis in this company? ? How do you know when you are doing a good job? ? What happens if you really mess up at work?

Several tools on different levels are necessary to assess organizational culture. Document analysis and examination of the company's yearly reports can be used to find artifacts, surveys and observations lead to espoused values and interviews are conducted to find out the basic underlying assumptions.
It is important that both partners know the basics of their culture. If not an analysis is very much recommended. None of the companies from the survey mentioned the importance of culture in this early stage of the cooperation.

4.2 Partner selection

Choosing the right partner is one of the critical issues in successful cooperation. The choice of the

partner does not only depend on the firm's technological capacities but is also a question of the strategic and cultural fit. Aspects concerning the partner selection were directly mentioned by about 8% of the R&D managers in the survey. It is very important that not only strategic aspects, e.g. tasks or resources, but also partner oriented criteria, e.g. organizational culture, are taken into consideration. Top management involvement is a must at this stage and supports this selection process, because the values of the management should reflect the companies' basic assumptions.

4.3 Set-up

Several factors have been identified as important in collaboration such as openness, honesty, loyalty etc. These factors are all part of concept of trust. Therefore the main issue is to build up trust between partners. Five dimensions underlie the concept of trust [Robbins 1996.]:

- Integrity: Honesty and truthfulness
- Competence: Technical and interpersonal knowledge and skills
- Consistency: Reliability, predictability, and good judgement in handling situations
- Loyalty: Willingness to protect and save face for a person
- Openness: Willingness to share ideas and information freely

For cooperation in new product development it is therefore necessary to be honest and to have the right competence in the first place. But how can you build up trust in a cooperation? The following checklist of trust-building activities should be kept in mind:

Table 2. Trust building activities

? Demonstrate you're working for the co-operation's interests as well as for your own! ? Be a team player! ? Practice openness! ? Be fair! ? Keep Your promises!	? Give complete and early information! ? Show consistency in the basic (underlying) values that guide your decision making! ? Maintain confidence! ? Demonstrate competence! ? Commit yourself to the cooperation!

Successful cooperations are characterized by high mutual trust among the partners. But trust is very fragile. It takes a long time to build, can easily be destroyed, and is hard to regain [Link, et al. 2001]. The results of the survey support this view. About ten percent of the statements in the survey directly address the issue of mutual trust.

4.4 Realization

As already mentioned before, one of the main success factors for collaborative product development projects is the interpersonal and inter-organizational relationship. One of the aspects of these relations is the frequency of communication. Communication structures can have three different basic layouts: either they look like a chain, like a star or like a network [Robbins 1996.]. None of these three structures is best for all occasions. On the one hand the information flow should be high between all partners in collaborative product development. Therefore a network approach seems to be the best choice. On the other hand a well informed project manager is also crucial for the outcome of a collaboration. So the suggestion is, that an all-channel communication has to be established, where the project manager is informed about contacts between partners.

Even in harmonic collaboration, opinions can differ on certain subjects. In one respect, this seems to be very annoying because it distracts the people working together, but a minimum level of conflict helps to keep a group of partners viable, self-critical, and creative [Robbins 1996]. As avoiding conflicts is neither possible nor reasonable using conflict resolution techniques to deal with conflicts is rather important such as: problem solving, superordinate goals, expansion of resources, avoidance, smoothing, compromise, authoritative command, altering the human variable or altering the structural variables. The use of these techniques depends very much on the situation, the persons involved and the cultural background of the partners.

4.5 Evaluation

According to the results of the survey, the last phase of the cooperation is usually not seen as important as the others. Nonetheless aspects of corporate culture are equally important here, when new or continuing cooperations are planned with the same partner. It is important two stay in touch with the partner, mainly to keep the level of trust high.

5. Conclusions

If one summarizes the aspects of a culture described in the preceding section, then several conclusions can be drawn regarding the application of the culture concept within cooperative NPD. First, the nature of the basic assumptions is such that we realize that management of cooperations in NPD must consider cultural aspects. Not only in the setup phase of a cooperation, where it concerns particularly the selection of the suitable partner, but above all also in the realization phase of the cooperation. It is in this phase in particular that the different cultures of the partners involved can lead to misunderstandings. Only the deepened understanding of the items of corporate culture makes success in the cooperation process possible. Since the decoding and the understanding of cultural issues require a proper starting time, long-lasting cooperations are favorable. Only by gradually becoming acquainted with the partners, a genuine approximation is possible. If a shorter, project-like, cooperation is nevertheless successful, it is not only because of planned structures and strategies, but also probably due to a coincidental correspondence of several basic assumptions in the corporate culture.

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