

# How Does Cultural Diversity in Global Innovation Teams Affect the Innovation Process?

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**Abstract:** International firms require the use of global innovation teams to achieve sustained innovation performance. This study researches how cultural diversity effects team and innovation performance. Our longitudinal qualitative study reveals effects of cultural value and of communication style differences within global innovation teams. From 105 interviews in five innovation teams at three different points in time, at three stages of the innovation process, we develop a model for diversity and time effects in global innovation teams. Specifically, we find that diversity in context, time, and power distance strongly influences the performance of global teams. Cultural diversity most strongly affects the feasibility stage.

**Keywords:** Cultural Diversity, Multi-Cultural Team, Global Team, Innovation, Stage Gate Innovation Process, Team Work

**EMJ Focus Areas:** Innovation & New Product Development, Technology Management

It is longer a question of whether or not to deploy global teams in international firms—it has become a necessity. Eighty-five percent of senior managers state that more than half of their work takes place within global teams (Maznevski and Athanassiou, 2006). In addition, firms competing on the global market with new product innovations use global teams to sense and integrate the diverse expectations and needs of international customers.

Global teams consist of members from diverse national and, thus, diverse cultural backgrounds who often work at dispersed locations (Harvey and Griffith, 2007). Global teams can be advantageous compared to national teams. The heterogeneous team members of global teams have better access to the local details and legal information necessary for the development and launch of customer oriented and successful products in different countries. Local team members often have direct contacts to local producers and distributors. There are other advantages of global teams. Global teams may have better and more creative ideas by merging different viewpoints and integrating the team's diverse knowledge of international markets. As such, McLeod and Lobel (1992) found that ethnically diverse student teams produce higher quality ideas in brainstorming tasks than homogeneous groups. Diverse group ideas were rated more effective and more feasible. This advantage is of high relevance for the development of new products. Another advantage of ethnically diverse teams is their capability for in-depth information processing. Global teams can deal with a broader range of information than moderately homogeneous teams (Dahlin, Weingart, and Hinds, 2005). While implementing global innovation, dealing with a broad range of information is an important requirement for the search of new product concepts,

the transfer and adoption of existing product concepts, and the improved launch of new products by global innovation teams.

Although global innovation teams are a necessity, they are not a guarantee for success. Numerous studies have shown that team processes influence team performance and, as such, innovation success. For example, teams can only be creative if members feel safe enough within the team to express their ideas and doubts – even if they may be unpopular (Craig and Kelly, 1999). This may not occur when team members are not attracted to each other, or when group cohesion is low. Social identity theory provides a theoretical foundation for these arguments. Results of numerous studies have supported that team members who are similar to each other are more attracted to each other and have higher levels of group cohesion. In contrast, team members who belong to an ethnic or national minority suffer from social categorization processes, leading to lower contributions to decisions (Kirchmeyer and Cohen, 1992), higher rates of absenteeism, less satisfaction with their own career, and lower commitment to the organization (Milliken and Martins, 1996). Ethnically diverse teams have significant drawbacks concerning their social interaction processes such as group cohesion, performance expectations, and positive attitudes within the group (Watson and Kumar, 1992). This leads to lower risk-taking behaviors for diverse teams. Weaker group processes can impede innovation in global teams since team interactions of high quality are needed to support the creative potential for innovation. Team members can also be caught in conflicts stemming from their diverse backgrounds. Such conflicts can slow down innovation implementation and reduce success rates for new products.

Our research aims to explore how the cultural diversity of global teams influences teamwork in the innovation process. We focus on the effects of diversity in cultural values and cultural communication styles for several reasons. First, previous research has shown that national or ethnic diversity has important effects. Nevertheless, a person's national or ethnic background does not necessarily determine his/her value system and behavior since companies often employ staff with intercultural experiences or staff who are bi-national. Second, studies indicate that the variance in cultural values within teams influences team performance more strongly than other diversity characteristics (Kirkman and Shapiro, 2005). Third, diversity in values strongly reduces commitment, satisfaction, and increases conflicts (Jehn, Northcraft, and Neal, 1999; Lankau et al., 2007).

Research considering the effects of diversity in specific cultural values is scarce (Bachmann, 2006). Previous studies have focused on collectivism within nationally/ethnically diverse teams (Staples and Zhao, 2006; Thomas, 1999; Vodosek, 2007). There is a lack of research on the effects of specific cultural styles and values on teamwork processes and on innovation. Our study aims to explore these effects. Global teams usually work jointly in projects during

the whole innovation process. We found evidence that diversity effects change over time. Thus, this study specifically intends to bring light to the effects of cultural diversity during the innovation process. The aim of our research is to gain an in-depth view on the subject. We developed propositions and a model that includes cultural differences and time effects from this qualitative study.

We used a case study method based on in-depth interviews with team members from five different global teams within a company we refer to as *BLUE*. One team was composed of three sub-teams. We conducted all interviews at different points in time during the innovation process. In an iterative manner, we analyzed and collected data. We used team-level analysis to find general topics; whereas, individual level of analysis was used to study concrete effects. During the research, we focused on three cultural dimensions (context, time, and power distance) and their effects in the course of the innovation process (Hall and Hall, 1990; House et al., 2004). We linked diversity in these cultural dimensions to teamwork processes that are associated with successful innovation implementation. We drew upon the team climate for innovation concept developed by Anderson and West (1996).

## Concepts

### Teamwork Within the Innovation Process

Firms often deploy formalized innovation processes to ease the journey from idea to market. In order to direct activities of complex processes, the stage-gate-innovation-process model has been found to be a useful tool for reducing time/costs of developing products and, therefore, has lead to competitive advantage (Cooper, 1990, 1999; Cooper and Kleinschmidt, 1994). The process begins with the idea and moves toward launch within four to seven stages. At the gates, go or no-go decisions are made depending upon defined criteria. Costs for tests within phases gradually increase, as tests become more reliable and reduce the uncertainty associated with the innovation (Cooper, 1990, 1999; Cooper and Kleinschmidt, 1994).

The model by West (Anderson and West, 1996; West, 1990) can enrich our understanding of the challenges associated with new product development and the stage-gate-process (see Exhibit 1). Moving through the innovation process puts different demands on the team. In the first phase (recognition), team members have to perceive and recognize deficits or external demands. This phase is supported through the team's vision, which includes how clearly defined, shared, attainable, and valued the team's objectives are (Anderson and West, 1996). A clear *vision* will enable the focused development of ideas (West and Anderson, 1996). A clear vision will be linked to the first phase of the innovation process, the idea phase. Throughout the innovation process, clear, shared, attainable, and valued team objectives direct team member behaviors and can also decrease conflicts arising diverging aims. Vision can also lead to the second factor of Anderson and West's model – participative safety (Anderson and West, 1996).

The second step of Anderson and West's (1996) process is the initiation phase. Here team members introduce their ideas in order to develop them further, modify, or even discard them. It is easier to introduce ideas if team members feel safe within the team (Amabile, Conti, Coon, Lazenby, and Herron, 1996). If team members express highly novel and unpopular ideas, this may lead to high levels of creativity within the team; therefore, *participative safety* is an important factor to increase innovation (West, 1990). Participative safety is enhanced through sharing of information, accepting other team members' points of views, and staying in contact with each other. During the innovation process, we consider participative safety of greatest importance when team members have to develop creative solutions. Creativity is strongly required in the idea and feasibility phases, when the new product concept is still very broad. Since new product development is a complex process, creative solutions in other phases are needed, e.g., up-scaling the product, and coordinating product launch.

The implementation phase also transforms the idea into a product. This phase of West's (1990) model starts when the executives and team leaders define the product concept. From this point on, high *norms of innovation* are important. The team needs to discuss ideas and share resources in order to realize the new concepts. Other dimensions can be helpful in this phase. Team members will be for example more open to share resources if participative safety is high and if team members have synchronized goals.

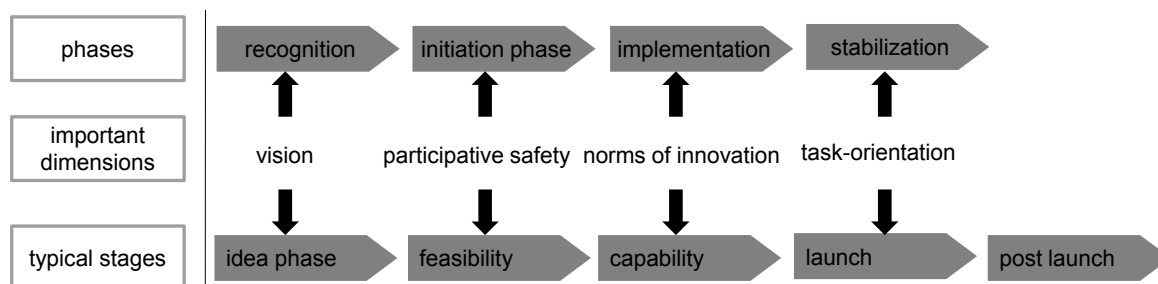
In the last phase (stabilization), the team reflects on the innovation constructively and critically. *Task-orientation* supports the stabilization phase; it is commitment of the team to obtain the highest possible standard of task performance (Anderson and West, 1996). Again, constructive and critical feedback may be linked to participative safety.

West's (1990) model seems to, at least superficially, support all dimensions at every stage of the innovation process; yet, dimensions become especially important in certain phases of the innovation process. While the product is still being formed, at the fuzzy front end (Russel and Tippett, 2008) dimensions supporting creativity, such as participative safety, are most important. For realization and implementation of the idea, task-orientation and norms of innovation become important. Exhibit 1 illustrates the possible relationships between different group processes and the typical innovation stages and phases.

### Multi-Cultural Teams

Culture, the collective programming of mind (Hofstede, 1980), distinguishes the members of one human, often ethnic, group from another. Culture refers to differences in values (Maznevski and DiStephano, 2000) or differences in communication styles (Hall and Hall, 1990). Since global teams consist of team members with different cultural value backgrounds and cultural communication styles, they can also be considered "multi-cultural teams." This

**Exhibit 1.** Group Processes Supporting Innovation Phases and Typical Stages



conceptualization allows us to take into account that (a) cultural values can differ within one country (Kirkman and Shapiro, 2005), and (b) that the national cultural affiliation of a person does not entirely explain their behavior as the experiences with other cultures may change their behavior and values. We assume that global innovation teams with team members from different cultural backgrounds are multi-cultural teams; therefore, we rely on prominent cultural models (Hall and Hall, 1990; House et al., 2004) to describe team member diversity.

Hall and Hall (1990) define culture through communication and describe dimensions on a behavioral level. They suggest that the following dimensions differ between cultures: different degrees of coding of information through language (high/low context), different need for territorial space (high/low space), and differences in the use of time and working styles (monochronic/polychronic). *Context* refers to different degrees of coding of information through language. In low context languages, most of the information is transferred explicitly coded. In high context language, little information is explicit. In order to decode the message, knowledge of the context is essential. The second dimension of Hall and Hall (1990) is *space*. Individuals have, depending on their national cultural background, different visible and invisible boundaries that must not be transgressed by others. If others do not maintain the normal conversational distance and get too close, individuals automatically feel uncomfortable and offended. *Time* is the last cultural dimension identified by Hall and Hall (1990). Monochronic individuals consider time as sequential. They prefer to finish one task before they start a new one. Time is a limited commodity that can be spent or saved. Polychronic individuals like to do many tasks simultaneously. Unlike monochronic people, they do not feel disturbed if someone interrupts their work.

The GLOBE project (House, Hanges, Javidan, Dorfman, and Gupta, 2004) identifies nine dimensions, which are partly derived from Hofstede's model. House et al. (2004) use uncertainty avoidance, future orientation, and power distance. Further, House et al. (2004) split the dimension of masculinity/femininity into two separate dimensions. Gender egalitarianism conceptualizes the degree to which a society minimizes gender inequality; whereas assertiveness includes whether or not individuals in societies are assertive, aggressive, and confrontational in their relationship with others. Individualism/collectivism is also divided into two dimensions: institutional collectivism (to encourage collective distribution of resources) and in-group collectivism (individuals express pride and loyalty with their in-groups). Humane orientation is considered the degree to which individuals encourage socially responsible behavior; whereas, performance orientation is the degree to which performance is encouraged in societies. The GLOBE project is distinctive as it conceptualizes

both a descriptive and a prescriptive level: the external layers of behavior through asking "as is" questions, and a value-level by asking "should be" questions (Erez and Gati, 2004).

We presume that these cultural dimensions influence team work during the innovation project (see Exhibit 2). Cultural values and attitudes, e.g., affect, cognitive styles, working patterns, personal interaction, coordination of task, are influential on innovation performance. Through social interactions team members may gain understanding; thus, their cultural values and styles might also change in the course in the project. Effects, changes of culture, and challenges of cultural diversity are still largely unknown and require in-depth research.

## Methodology

### Study Design

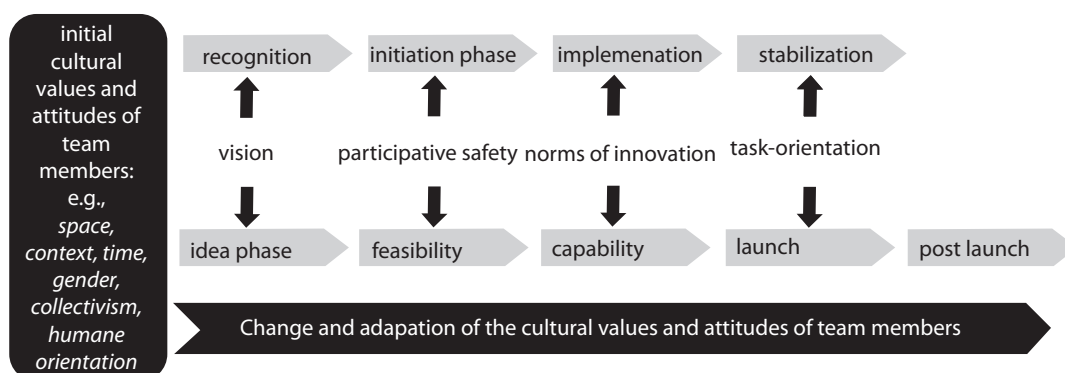
To research the complex and in-depth processes of cultural factors in the innovation process we set up a qualitative field study within the company BLUE, a global consumer goods company that deploys global innovation teams. Members of their global innovation teams are classified into core and extended team members. Core team members are cross-functionally organized and in constant information exchange with the regional project teams (extended teams) in international sub-units of BLUE. As such, the core and the extended teams are culturally diverse. The company applies a stage-gate-process, inspired by Cooper (1990), to implement its innovations.

Qualitative methodology is advantageous to analyze complex social processes (Suddaby, 2006). In addition, qualitative methodology can identify dynamics of a phenomenon that are difficult to detect with other methodologies (Conger, 1998). Through observing dynamic effects, it is possible to identify the underlying theoretical constructs (Siggelkow, 2007). Another advantage of qualitative methodology is the potential to consider how individuals interpret their reality (Eisenhardt and Graebener, 2007; Suddaby, 2006). Qualitative methodology is appropriate for our research questions because culture shapes the interpretation of social interaction and, therefore, gives meaning to actions and behavior (Erez and Earley, 1993).

### Selection of the Sample

We have shown that different cultural team compositions influence team outcomes. Aiming at generalizable results that reveal underlying conditions and the logic of the phenomenon, we selected (theoretically) contrasting cases (Corbin and Strauss, 1990; Eisenhardt, 1989; Eisenhardt and Graebener, 2007). The selected teams have varying degrees of national and cultural diversity. We have criticized studies on diversity focusing on the number of nationalities or ethnicities in the team to determine the

**Exhibit 2.** Cultural Influences on Phases and Stages of Innovation



degree of diversity only; therefore we use GLOBE's (House et al., 2004) country evaluations and Hall and Hall's (1990) evaluations on nationalities as an anchor to select teams from more or less culturally distant countries. In the beginning of the study, we selected three teams that differed in their national composition, as well as the cultural distance between team members.

The first team, for the purpose of the study called SALSA, consisted of three sub-teams: (a) one cross-functional global team, whose members were mostly located in Latin America, (b) one research team conducting basic research at a location in the Netherlands, and (c) one development team working on the formulation of the product. Teams were considered highly diverse in national and ethnic values. They consisted of members of different nationalities and dissimilar individual cultural value systems (e.g., different scores of masculinity, power distance, individualism). The second team's core team, ROUGE, consisted of a Swiss-German project leader, leading Dutch and German team members. This team is culturally homogeneous due to the individual cultural value systems, despite its national diversity. The third team, LA FAYETTE, consisted of several German members, a Spanish team member, and a French project leader. After having observed and interviewed the teams for a year, we selected two additional teams in order to validate the presumption of the influence of cultural team composition. Our fourth team, BOLD, was highly diverse. It was led by an Indian and Argentinean project leader, and had members of different nationalities and dissimilar individual cultural value systems. In order to contrast and polarize results, we selected SPLENDIT as our last team. SPLENDIT's core-team members were mainly British; only one member was Dutch.

All cross-functional core teams were supported by extended team members who were also interviewed. Extended team members were usually regional brand managers reporting to the project leader and the regional manager. Two products were launched in Europe, while the other products were global innovations.

### **Data Collection and Analysis**

We applied the study in a global consumer goods company—BLUE. The company implements, worldwide, a standardized, innovation-project structure inspired by the stage-gate model of Cooper (1990) using defined stages and gates upfront and follows these through the stages sequentially. We conducted team observations and semi-standardized, in-depth interviews at three points in time. As the focus of our research question deals with the development of effects of cultural values over time, we used a longitudinal study.

Within the first two interview phases, we concentrated on benefits and problems of multi-cultural teamwork. We used content analysis for the questions and presented the results to our interviewees within the third interview phase. We asked them to comment especially on cultural effects and changes of culture over time. We also asked them which of the cultural effects influenced the innovation process, at which point in time, and why. We worked with mind maps and visualized the innovation process in phase three. Notes were taken on the visualizations.

If team members were locally dispersed, we interviewed them before or after team meetings in order to reduce travel expenses. If team members were working at the same location, we arranged interview meetings leaving more time for talks. Interview time varied from 20 minutes to one hour, 43 minutes. Interviews that were conducted around team meetings were usually shorter because of time restrictions. Interviews in the third round typically lasted around 45 minutes.

In total, we conducted 105 interviews with 86 team members at three points in time. Due to technical difficulties, records of some interviews were damaged. Eighty-seven recorded interviews were first transcribed semantically, leaving out fillers and grammatical mistakes. Since our focus lays on the content, this method of transcription is appropriate (Schilling, 2006).

In the first round of the interviews, we asked questions focusing on the team's social interactions as well as perceptions of cultural differences within the team and their effects (positive and negative). During the second round, questions centered on the main issues since the last interview round, as well as the development of effects. We coded statements concerning positive and negative effects inductively for an initial analysis. We presented these codes to the interview partners within the third round of the interviews. Interviewees were asked to comment on the positive and negative effects they perceived within their teams, how these effects developed over time, and where within the innovation process they were beneficial. We focused on the cultural dimensions of context, time, and power distance as our interviewees mentioned these dimensions most often and they seemed to have the strongest influence on team processes in diverse teams.

For our model, we concentrated on the analysis of the interviews to reveal the subjective interpretation of team members (Suddaby, 2006). In addition, we observed teams during team meetings to detect more objective interaction patterns (Conger, 1998). During team meetings observers rated how strongly team member contributions were balanced, whether or not communication was direct and open, how much team members supported each other in discussions, and how well team members coordinated tasks within the meetings. As well as these dimensions, indicators for cultural differences between team members were identified. During team meetings we took notes and did not record on the meetings since sensitive information concerning the innovation was discussed. After the meetings we wrote reports and memos from the notes. These served as aids to triangulate interview data and identify context factors. In addition, notes from the interviews that were not recorded served as additional information, although they were not coded systematically.

## **Results**

### **Description of the Sample**

Most interviewees worked in Research and Development (R&D) (45 interviewees), and 26 interviewees were from the marketing department. In addition, there were eleven interviewees from supply chain management, one person from finance, and one from packaging. We did not obtain information about the professional backgrounds of two team members. In total, we interviewed people from 26 different nationalities. German/Swiss (19 team members) and British (15 team members) nationalities were the predominant nationalities. Latin Americans, members from Eastern, Southern, and Western Europe as well as members from the Middle East and Asia also participated in the study.

### **Diversity in Context**

Diversity in context was a frequent topic for team members in multi-cultural teams. Team members often perceived differences in the directness of language. Especially when Dutch (low context, direct communication style) and British (high context, indirect communication style) team members worked together, interviewees made statements concerning differences in context. Team members observed diversity in direct or indirect information



transfer also in other nationalities. Exhibit 3 shows typical effects of diversity in context within multi-cultural teams.

The examples show initial negative emotional reactions of team members with high context language if confronted with low context speech. Common reactions were being offended or considering the other person as “rude”. These latent-conflicts can lead to team member feelings of uneasiness within the team that may lower perceived participative safety.

*Proposition 1a: Diversity in context will negatively influence a team’s participative safety within innovation teams.*

Participative safety is most important at early stages within the innovation process when team members have to provide creative input because the product concepts and its features are still undefined. Specifically, high context team members may feel less safe to express their ideas and influence the new product in this phase.

Although some empirical evidence suggests that ethnically diverse groups bring higher quality ideas to brainstorming tasks (McLeod and Lobel, 1992), we oppose this view. The sample used by McLeod et al. consisted of American students or students from abroad who lived in the U.S. for an average of 12 years. Such “foreign” students got used to a certain communication style—the low context language of U.S. Americans—or even adapted their communication style. We argue that multi-cultural teams who do not have such a history are still more diverse in context. Due to participative safety and higher likelihood of communication clashes, teams will show lower levels of creativity in the idea phase than teams who have low levels of diversity in this dimension. Team members from context-diverse teams, especially high context team members, will not feel as safe to express ideas, especially if they are highly unusual. This will lead to fewer and/or less unique ideas. We propose:

*Proposition 1b: In the idea phase of the innovation process, diversity in context will lead to lower levels of creativity in innovation teams.*

We found participative safety especially important in the second phase within the team process—the initiation phase (West, 1990). Context has the strongest impact on the innovation process in the feasibility phase: each team member can openly share thoughts about consumer preferences, the project, and product concept in BLUE’s idea phase. In feasibility, subsequent to idea phase, discussions take place to select the best idea and decide how to proceed with the project. In this phase, communication increases among team members. Low context team members were found to have difficulties understanding arguments presented in an indirect (high context) way. Their ignorance of important arguments as well as their own direct (low context) way of arguing lowers participative safety. Clarifying misunderstandings will also require time resources that should be used to find good solutions. Another important step in the feasibility phase is to discuss the project with the country representatives. In those discussions representatives articulate their view of the local or regional (international) customer, develop their view of the product adaptation, explain production alternatives, and elaborate alternatives for the market launch in their region. In this phase, core team members have to exchange information with the extended team and to convince stakeholders to join the project and accept the product. There is great potential for conflicts and misunderstanding across team members and representatives; yet understanding and compromises are necessary. Differences in language and information transfer will strongly affect the process of understanding and compromise. Thus diversity of context will have a strong negative influence on understanding and, as such, the innovation process in this phase. We therefore argue:

**Exhibit 3.** Evidence of Diversity in Context (italics added by authors for emphasis)

Nationality	Evidence from Interviews: Typical reactions and effects of high context team members to their colleague’s low context communication.
British	“So when you first start working with someone and they are very—they are very forthright and they are very as-assertive and may challenge a lot and question a lot. My initial impression is to think: ‘Gosh, are they questioning my ability? Are they worried about something? Do they think that we are going completely in the wrong direction?’”
Brazilian	“Another issue that I could see was in the meeting. Mr. B. told us about changes in the team. I pretty much liked the way he did it. But for many people in Latin America it could be seen as cold. A cold way of speaking, of communicating changes because he was saying a director leaved the position, another guy is leaving the company. All together in two minutes I know: it’s raining. I think it could be shocking for some people, this way. I really think it’s a transparent way of working. I can tell you about a lot of changes in the company that everybody knows, but that nobody was talking about. And he really talked with transparency about it. In this side I think it was very good. <i>But maybe it was shocking for many people.</i> I don’t know if I was clear. It is not the information. It is the way of saying it.”
Chinese	“At the beginning I didn’t know why people are so straight. <i>Sometimes it is very difficult to accept. I didn’t know why is he so rough.</i> But afterwards you are know that are cultural differences. So I can also talk in the same way.”
Argentinean	They [Mexicans] are very formal, very polite, not going to the point very directly. They would say a lot of things and you would have to understand what the message is behind. <i>They are offended rapidly</i> if you don’t have the proper way to approach them.
French/ Portuguese	No, I think—well, the challenges are sometimes if you are used to work with English people, they are very polite and how do you say—sometimes they will hold back on things not to ... <i>I don’t know if it is to hurt people.</i> Nobody is here to hurt people but maybe don’t say things in their mind. But for example—I don’t think that [our project leader] will hold back from things that he thinks. I will not as well—you know. [The other project leader] will not do that. Again, you know it is because we come from different cultures. But you know—in all the teams that I have worked—they are all multi-cultural. We have always somebody from a different continent within the team and sometimes more than one.

*Proposition 1c: Diversity in context will negatively influence the innovation process in the feasibility phase.*

In addition, low context team members may not understand criticism from high context team members. As many Dutch and German team members communicated, and one Dutch team member in particular stated:

“What I have seen in the past is that people who were not from the UK looked at the minutes for the meeting and said: ‘Let me know: Who has agreed now?’ It was phrased in such an open language. ‘Potentially,’ ‘Maybe we should...,’ ‘We conceived to have a look at...,’ instead of ‘Yes,’ ‘No,’ ‘We go left,’ ‘We go right.’ That is quite difficult because you want a set of actions. So people maybe misunderstand each other.”

We argue that differences in the use of language will not only lead to less participative safety in the beginning of the process, misunderstandings of team members due to diversity in context will also reduce the speed of the innovation process by slowing down information transfer, understanding, and constructive compromise. We shared this impression with team members who stated that they perceived that multi-cultural teamwork slows down the innovation process especially in the beginning. This is reflected by a British team member: “I think at the start of the project there were issues where the processes and discussions lasting longer, but I think that this really sorted it and we got to know each other better.”

*Proposition 1d: High diversity in context causes a longer idea phase.*

Although diverse teams seem to deter teamwork at the beginning of a project, the negative effects of diversity may cease over time. Thus, ethnically heterogeneous teams have lower team

performance in the beginning of their tasks, but they catch up and even outperform moderately heterogeneous teams. Teams seem to find ways to interact and communicate (Earley and Mosakowski, 2000). Especially for the dimension of context, we observed strong changes within team member behaviors and communication styles. The negative effects decreased during the innovation process and even led to individual learning (illustrated in Exhibit 4).

Within the third phase of the interviews, we identified the effects of context as non-serious, decreasingly, and not massively affecting teamwork during the innovation process. We propose:

*Proposition 1e: Negative effects of context will cease over time. Teams diverse in context will experience fewer detrimental effects of context after feasibility phase.*

### **Diversity in Time**

Diversity in Hall and Hall's (1990) time dimension was also mentioned in interviews. Monochronics were irritated by lack of punctuality of polychronic team members, especially if deadlines were not met. Exhibit 5 shows that reactions ranged from irritation to anger toward their counterparts.

Monochronics reported an increased difficulty in organizing their own task if it depended on a polychronic person. In some cases, monochronics even reported a decrease in their motivation and dedication to the project. Monochronic team members perceive less contribution to the project from their polychronic counterparts. Since monochronics feel their polychronic counterparts hamper their effort and high accomplishment, synergy, a component of task orientation in West's model, is impeded. Thus, task orientation is impacted negatively.

*Proposition 2a: Diversity in time use leads to perceptions of lower levels of task orientation within the innovation team.*

**Exhibit 4.** Evidence of Changes of Diversity in Context (italics added by authors for emphasis)

Nationality	Evidence from Interviews: Learning from context diversity.
British	“When I first joined [...] my new manager is K. now and the first thing she said to me was: “Because I am Dutch, you know, expect me to come across quite rude sometimes but it is not – it is just the way Dutch people are.” So I expected the worst but it is not really happened yet. <i>So I think because I expect it but it never offend me but I think that is an important effect that people are aware of the cultural differences.</i> When the people know then it is not such a problem.”
German	[Translated from German] “To stay with this example: The British sometimes have an ingenious way of handling things (...) sometimes this British way can be extremely helpful if you have to work around issues or if you have to say something displeasing without hurting him. <i>Then it [high context] is a great tool that you can use.</i> ”
Dutch	“What you are often hear is that Dutch people are quite direct and quite open in the way expressing everything and what you will see the English people are more—I would say the gentle in a political way expressing their views on different subjects which is a little bit different than the way Dutch people are doing that. This could sometimes—a little bit of a conflict and in there will see that the way of expressing for instance in an email or the way of expressing in a meeting or whatever could not be meant like that towards people—it—the—if the way they receive the message is than a little bit negative. <i>So you have to be careful whether the way you express the things. So that would you find out if you work over borders.</i> ”
Dutch	Interviewee: “ <i>What I have learned it the last couple of years is, not always to be Dutch. When you talk to people from other cultures, you approach them in the way they want to be approached. I guess it is very, very useful in achieving what you want to achieve.</i> ” Interviewer: You said it can be important in certain aspects. What kind of aspects do you mean?”  Interviewee: “I mean MINERVA is a very big company. There are a lot of people and sometimes there are internal politics involved. Internal politics do not work well if you just say “Yes”, “No”, “This is the way it has to be”. Sometimes you have to be smarter about those things. I think people from the UK have that naturally more than the Dutch. So they are more inclined to phrase things carefully, not to step on too many toes. I have seen that in the past. It is easier for a Dutch person or a German person in a meeting to offend others than for somebody from the UK. You don't want to do that. Sometimes you have to but you don't always want to do that.”

**Exhibit 5.** Evidence of Diversity in Time (italics added by authors for emphasis)

Nationality	Evidence from Interviews: Typical reactions of monochronic team members to polychronic work style and effects.
French	[Translated from German] "In our team it became evident with people from Africa, e.g., they take their time. I think this is typical for those countries, that they are not stressed. (...) <i>But I understand that many people in the team are annoyed because they always have to wait for someone and in the end they don't get it.</i> "
Dutch	"I have my Egyptian chef. He is ... in the beginning, I had this huge argument with him because always we had some timing and when I came to him, he never was ready. This is something what is happening in the beginning. <i>'Shit what... Come on. We have an agreement. You should give me the recipes so I can do the trials.'</i> Okay I know this is kind of working and I solved this way."
German	[Translated from German] (Interviewer: <i>Where are the largest conflicts?</i> ) Interviewee: "Speaking of culture? I think probably different attitudes towards discipline, for example timing. When do I have to come? <i>When do I have to call somebody? When do I have to have something ready?</i> This is discipline to me."
German	[Translated from German] "Some people interpret punctuality or deadlines different as it is written on the paper. <i>Of course this has an effect on our working motivation.</i> "
Brazilian/Japanese	Some countries are much less punctual than others are. Some tend to be punctual but other countries tend to be not very punctual. This is not only related to SALSA project but to countries. For instance in Mexico, when they say "audita morago" it means that they will do right now but it doesn't mean that they will do right now. It's just a way of saying. Everyone knows that it doesn't mean that they will do it right now. Sometimes people <i>get very mad and upset</i> about this word "audita". "Please do it now, not audita!" These are the ways we observe at the different cultural forms of the countries.

Especially in the R&D Team, SALSA, German team members reported that diversity in time led to conflicts because product tests were difficult to coordinate when polychronic team members missed their deadlines. Although some team members find diversity in time distracting throughout the process, it is less influential in the idea phase of the innovation process, where creativity plays a central role. It gains importance in the later stages of the innovation process during feasibility, where the new product has to be tested to prove its customer attraction and technical abilities. Late deliveries of polychronic team members deeply affect their monochronic counterparts, as the team is working to meet the deadline of the next gate.

The capability phase within the innovation process can undergo problems of diversity in time which impedes task orientation. Especially in the implementation phase, a good coordination of efforts of team members becomes important. Here production of the product has to be coordinated among different regions, time zones, and facilities. Coordination processes of global product launches are complex. Here diversity in time can

have detrimental effects and lead to high levels of stress because tasks are not sufficiently harmonized. Good work standards and the coordination of tasks and agenda are especially important for monochronics. We therefore propose:

*Proposition 2b: Diversity in time use will decrease the speed of the innovation process in its later stages.*

Although diversity in time may be harmful in the implementation process, we observed strong team learning concerning this cultural dimension. We found that many monochronic team members adapted to their polychronic counterparts' habits and interpretation of deadlines. We observed an increasing composure on the one hand; whereas, polychronic team members changed their behavior toward more punctuality (see Exhibit 6).

Cultural diversity in time use, therefore, will harm the innovation process throughout. Nevertheless, team members learn how to deal with different attitudes and behaviors concerning

**Exhibit 6.** Evidence of Changes of Diversity in Time (Italics added by authors for emphasis)

Nationality	Evidence from Interviews: Learning to handle diverse time approaches.
German	[Translated from German] "They [the Egyptian culture] are more relaxed, and sometimes this causes conflicts. Deadlines are not met. If a meeting is now planned in June, then you can be sure that it won't take place until August. <i>But once you know that it is ok.</i> "
German	[Translated from German] "The difference I notice is sticking to appointments in France doesn't exist, basically. So if I schedule a meeting at 10 a.m. nobody is showing up and then it gets 11 a.m. Then you meet the other on the hallway for a cup of coffee and he says: "Oh, we should sit together and discuss." And I say "Yes, this is because we had an appointment this morning." "Yes indeed, this is why we will meet this afternoon." <i>And I think: fine, then we will meet this afternoon.</i> "
Italian	"My biggest learning in Germany was being on time."
Dutch	(...) This is something what is happening in the beginning. "Shit what. Come on. We have an agreement. You should give me the recipes so I can do the trials." Okay I know this is kind of working and I solved this way. I'm going (...) a week earlier, two weeks earlier I'm going to sit with him. <i>Okay, I have to make some kind of effort and in the beginning I was always writing mails and phoning him but it works much better with him that you pass by drink a tea and sit together and then it works.</i>

time and working style. We, therefore, argue that the negative impact of diversity in time will be strongest in the feasibility and capability phase, if the team members interact with each other on a regular basis.

*Proposition 2c: Diversity in time use will have the strongest negative impact on the innovation process in feasibility and capability phases.*

### **Diversity in Power Distance**

When considering GLOBE's cultural dimensions, team members perceived power distance differences most often. Out of the observed cultural dimensions, diversity in power distance caused the most severe problems. More precisely, differences in levels of power distance between team members and their team leaders caused difficulties. Low power distance team members suffered from a high power distance leader within one of our teams, LA FAYETTE. Team members of LA FAYETTE described their team leader as very hierarchical and non-participative. He excluded low power distance team members from decision processes and from necessary information. We observed a deep dissatisfaction that manifested itself in intentions to leave the team, as well as power struggles, which were intensified by a reorganization of the company. For some team members, as illustrated in Exhibit 7, high levels of frustration resulted in lower engagement in the team's task.

Frustration started early in the project when team members saw that the project leader coordinated all efforts, and team members met each other on very few occasions. Soon, low power distance team members felt that they were not sufficiently integrated in decision processes, and their creative potential remained unused. They increasingly questioned the decisions of their team leader, which they perceived as biased, thoughtless, and not sensitive. In the feasibility phase of the innovation process, conflicts between team members and the team leader escalated. They initiated a reorganization of the team where one of the former team members took over team leader position.

At the beginning, team members started to try-out norms to regulate their decision range; however, diversity in power distance

will become clear at decision points. High power distance leaders will make decisions that are not aligned with team members. This action will, thus, create an unexpected decreased power range. If low power distance team members do not participate in decisions, they are less willing to accept the team outcomes. Decision gates within the innovation process are points where team members have to show preliminary results and convince stakeholders to support the product further to launch. We argue that teams will perform badly at this stage, leading to a higher rate of no-go decisions for projects. Low power distance team members do not identify with the goal, content, process, and control of the innovation project when teams are led by a high power distance leader.

*Proposition 3a: Diversity in power distance between team members and the team leader will lead to decreasing levels of task orientation of team members.*

*Proposition 3b: Diversity in power distance between team members and the team leader will lead to decreased perception of innovation support of the team members.*

*Proposition 3c: Diversity in power distance between team members and the team leader will lead to a higher probability of no-go decisions within the innovation project.*

### **Comparing Effects of Diversity in Context, Time, and Power Distance**

Team members seldom reported a change of power distance. We only talked to two high power distance team members who stated that they learned that BLUE or their team leader expects more of them than just executing tasks. They reported that they learned to challenge leader opinions, decisions, and to actively participate in discussions within the team; yet, the process for change in behavior occurred less quickly than for context and time, where team members learned how to handle differences. According to Schein's onion model of the organization, deep level assumptions and values lie on the very core of the onion, being relatively stable, whereas attitudes and behaviors lie on

**Exhibit 7.** Evidence of Diversity in Power Distance (italics added by authors for emphasis)

Nationality	Evidence from Interviews: Typical reactions and effects of power distance diversity.
German	[Translated from German] "Within the team LA FAYETTE decision making is very difficult. If I think about the core team, where we had to make some decisions, they were taken in a top down process, without any consensus. It was like that this meeting but also the meeting before. We have many different opinions." Interviewer: "How do people react on that?" "Demotivated, we withdraw from the project."
German	[Translated from German] Interviewee: "The platform is pretty closed, but this is only true for the project LA FAYETTE, not for ROUGE." Interviewer: "What are the effects?" Interviewee: "It leads to <i>frustration on both</i> sides. I can only speak for my side, but we often had a discussion where I said: 'I can understand your point. There is a project brief you have to accomplish.' But you don't feel integrated as you are used to with other projects. <i>You get the feeling that France has a very patriarchic system where decisions are made and where nobody may contradict. This is my intercultural problem.</i> "
British	I think I mean the only thing I would say on this (...) I guess we have had in one of the jobs I did, and this is not a Viking thing, but in my previous role we did have somebody come in to the organisation at a very senior level. He was a very autocratic person and you do see (...)— <i>I mean it has a hugely negative effect on the team.</i> I think partly because the guy he replaced was just the most democratic person you ever wish to meet. But I am not sure whether that was more personality or culture I mean he—he was I mean—he was not from the UK but I don't think it was to do where he was from. I think it was more that that was just totally his style.



outer levels of the onion and are more easily changed. The model applies to cultural models as well and explains cultural shifts in society (Erez and Gati, 2004). Harrison and his colleagues (2002), also link the model to diversity and argue that deep level diversity such as diversity in values or personality, has more harmful effects on teamwork than surface-level diversity, such as easily perceived diversity features including gender, age, or ethnicity. We use the model to categorize context and time as medium-level diversity, which can change more quickly during an innovation project; whereas, diversity in cultural values, deep-level diversity has a stronger and more negative impact and changes more slowly.

*Proposition 4a: Cultural diversity is categorized into medium- and deep-level diversity according to the level of visibility.*

*Proposition 4b: Team members in multi-cultural teams adapt to medium-level cultural diversity (context, time) during their innovation project and gain strongly cultural competencies.*

*Proposition 4c: Team members in multi-cultural teams adapt slowly to deep-level cultural diversity (power distance) during their innovation project.*

## Conclusions

### Implications

The aim of this study was to identify culturally related factors, their interplay with team processes, and their relationship to the innovation process. We derived eleven propositions (see Exhibit 8) related to the effects of context, time, and power distance diversity from the results of a longitudinal qualitative study within a global company.

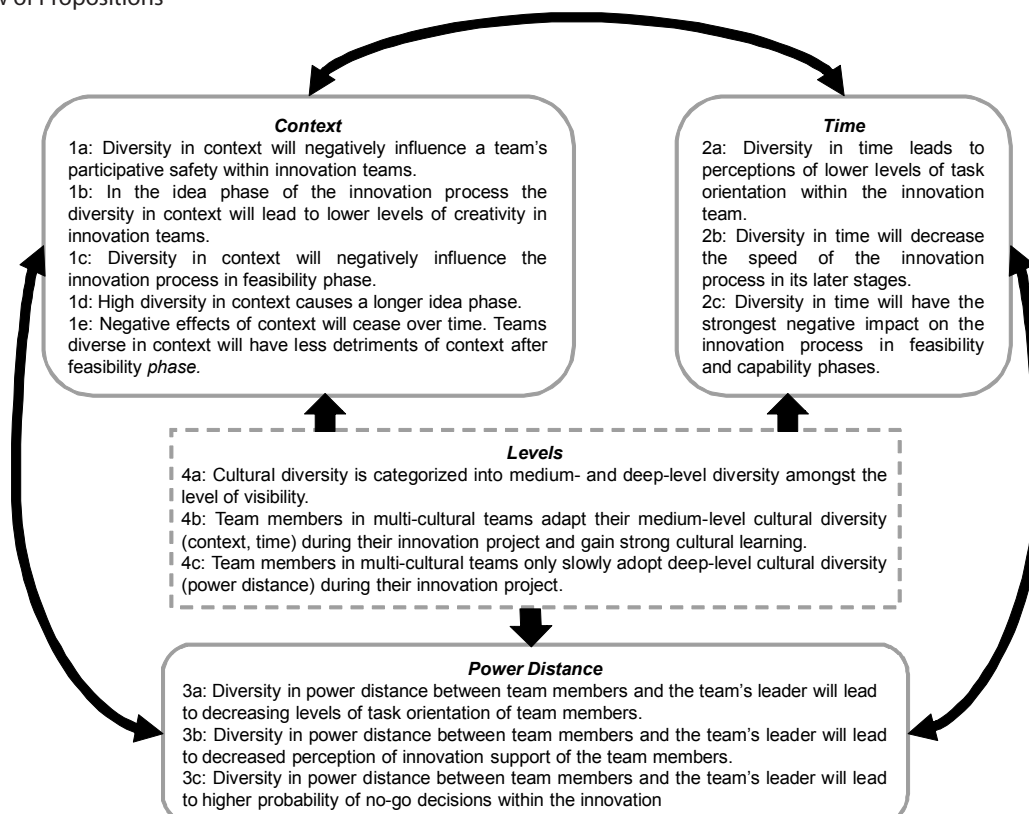
The 105 interviews in five innovation teams provided us with rich results identifying different limiting factors of innovativeness. We developed our model based on the identified factors.

We found effects of context and time on team climate dimensions that may hamper creativity and quick advancement in the beginning of the innovation process. As a result of diversity in context, team members will experience more conflicts and less participative safety. Also, diversity in time induces conflicts in the beginning of the process that can delay the innovation; however, the importance of this effect weakens over time and can even change into a positive outcome. Team members adapt their communication styles and gain cultural competencies. Diversity in power distance manifested its negative effects especially at the gates, when low power distance team members realized how little they participated in the decisions. Power distance diversity has the strongest effects on the innovation process. Diversity in power distance thus has severe long-term effects. As leaders are known to have a strong influence on team outcomes (Anantatmula, 2010; Chen and Bliese, 2002; Dragoni, 2005; Sosik, Avolio, and Kahai, 1997), power distance diversity seems to play a central role within innovation teams but also in interaction with external stakeholders. Exhibit 9 summarizes our proposed model.

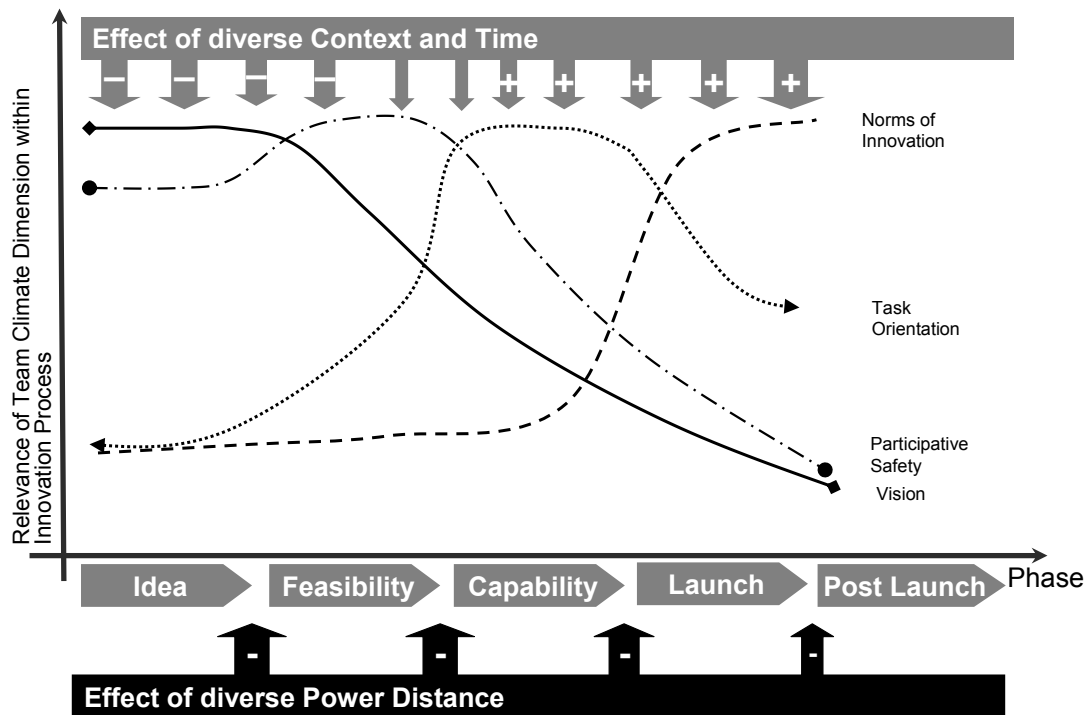
Our results have numerous implications for global innovation teams. First, companies should try to create mixed teams on the basis of their cultural dimension of context, as it increases the sensitivity of team members in their use of language. Within a multi-cultural team, team members that are diverse in this dimension will experience direct feedback, and they will broaden their repertoire of communication styles. Similarly diversity in time use will lead to a sense of urgency of polychronic team members, which may benefit the organization, if time plays the central role for the firm in innovation implementation.

Second, companies should avoid high degrees of diversity in power distance between team leaders and team members. This is particularly important as cultural values change in small degrees and slowly (Bouncken and Winkler, 2008). We suggest that high power distance leaders should not supervise low power distance

**Exhibit 8.** Overview of Propositions



**Exhibit 9.** Model of Cultural Effects in the Innovation Processes



innovation team members. Selecting the right personal will be beneficial to align leadership styles with follower expectations. A strong company culture, especially a strong leadership culture may reduce power distance diversity, by attracting a culturally homogenous group of organizational members. Company culture also increases identification and cohesion of the teams and will help to act as a moderator to prevent conflicts arising from cultural value differences (Chatman, Polzer, Barsade, and Neal, 1998).

Third, we found that the beginning of the innovation process is most strongly influenced by context, time, and power distance diversity; however, standardized innovation process models often do not account for these cultural barriers. If companies do not account for these obstacles and provide more time for global, multi-cultural teams in the beginning of the innovation process, good projects may be killed, because the team has not yet found the right communication and work style. Therefore companies should consider extending the first two phases of the innovation process. If team members overcome their difficulties, they will be able to catch up on their project in later phases; therefore, team interactions of global teams should be monitored, reflected, and evaluated at the gates. A team climate inventory may help to identify weaknesses and provide indicators for team interventions. In any case, companies have to facilitate team member interactions of multi-cultural teams strongly in the beginning to give them the chance to overcome communication deficits quickly. Here the benefit of face-to-face interaction may outweigh travel costs, if time to market is significantly reduced.

### Limitations

**Model and Scope.** Considering the results and the suggested model of cultural adaptation as well as the effects of power distance, we have to stress that we have been researching a Western company. A company's vision and its culture can influence the results even if some of the interviewed team members were from distant cultures. In addition, diversity in values might have different effects in

other countries. In this line, Kirkman and Shapiro (2005) found that cultural diversity might have positive effects in the United States but not in the Philippines. Also, we found no cross-cultural studies that test whether or not team models of West (2002) and Hoegl and Gemuenden (2001) can be generalized over cultures. Thus, our study and model has to be replicated in companies whose headquarters are not located in the Anglo-Saxon world.

As usual in models, a limitation lies within the somewhat artificial simplification of team processes during the innovation process. We make the following implicit assumptions of multi-cultural teams to make our model work: First, we assume that our team members were unexposed to different cultural styles in the beginning of the innovation process. Note, that this will seldom be the case in a company since team members usually already have some cultural experience because of former cross-cultural projects. Second, within our project teams, some team members joined the team later than others did. Effects of diversity of context and time will therefore be more bound to the starting point of the team than to the phase of the innovation process. Third, cultural composition is just one factor, which may impact team's innovation success. Communication in global teams will be strongly influenced by team member language skills and distribution of power. Team member fluency with the team language are strong sources of power within cross cultural teams, as fluent team members will dominate discussions and decisions (Janssens and Brett, 2006). Also, the physical proximity of team members strongly influences team work and team work effects (Hoegl and Proserpio, 2004). Fourth, cultural team composition and cultural fault-lines influence conflicts and learning within multi-cultural teams (Bouncken and Winkler, 2010). Thus, team composition influences which cultural norms will evolve during the team's work. Nevertheless, our model contributes to an in-depth understanding of social processes within multi-cultural teams.

Our model is bound to the stage-gate innovation process, which many but not all companies deploy. Companies in industries with high uncertainty and risk may use more flexible

innovation processes (Iansiti, 1995; MacCormack, Verganti, and Iansiti, 2001; MacCormack and Vergati, 2003) than the formal style used in this firm. We assume that it is possible to transfer parts of our model to flexible innovation processes as well. It is possible that the impact of diversity in culture is even stronger in flexible innovation processes since they rely more strongly on social interaction processes between team members.

## Methodology

We have to draw some methodological conclusions from the lack of statements concerning individualism and uncertainty avoidance. Although it is possible that differences in the named dimensions are not existent or important in our observed teams, a large body of research underlines the importance of the dimension of individualism for group preference towards goals, responsibility, training, self-management etc. (Earley and Gibson, 1998). It is striking that we did not find many statements that discussed effects of diversity in individualism on conflicts. The absence of these statements might be caused by the selected methodology. Although culture has been assessed by interviews before (Gibson and Zellmer-Bruhn, 2001) and was evaluated as a valid method (Kirkman, Lowe, and Gibson, 2006), a questionnaire methodology might be able to identify additional effects.

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