Uncertainty Management Concerning Cultural Dynamics in Project Management –Case Study

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1   Introduction

Projects are a common way to carry out different type of tasks, which are in many ways unique. Even if the number, complexity, and scope of the big projects have been increasing, the project as a way of organising holds its popularity. Attention has also been drawn into soft issues like social and cultural factors affecting on projects. Large and complex engineering projects including dams, power plants, and airports have participants from several separate organisations and national cultures thus, from different cultural backgrounds. Misunderstandings and unintentional messages can affect project work practises, management procedures and leadership styles.

There is contradictory evidence whether cultural diversity has an impact on projects or not. Also, research concerning the nature of impact has given reversed evidence. In practise, the concept risk is used to mean only the negative impacts, threats, and hence in project management the concentration has been to manage the negative side of risk. Uncertainty as a concept has come to replace the more extensive meaning of risk including also the positive effects. In this paper, the word risk is used to describe both negative and positive effects, threats and opportunities. Uncertainty management means here the management of uncertainty related to risks.

First of all, the case studies were used to trace the significance of cultural differences on projects. Seven case studies revealed that the importance of cultural differences for projects is not that clear. Culture can be seen to affect on many areas in project management (cf. PMBOK, 2000). Human resource and communications management are seen the most affected, but some clues can be found also, for example in risk, time, cost and quality management. The culture has often been treated as a static factor so the concept cultural dynamics is used here to mean the dynamic nature of cultures' impact.

Secondly, the management of cultural diversity were analysed. The cases and existing literature revealed that there are many ways of managing cultural diversity, but what raised the interest was how project managers were disposed on cultural diversity of the others/other organisations or themselves/their own host organisation. Cultural diversity creates sometimes a risk to project. As previously represented the impact can be positive or negative. Uncertainty relates to risk measuring the probability and the possible impact of risk. Cultural dynamics are seen here as risks, and yet the probability of risk's occurrence and impacts are not fully understood.

Thirdly, the relationship between the management of cultural diversity and project outcome were identified. Six project managers and their counterparts were interviewed (one of the project managers had two projects). Five of the case projects were successful and two of them led the host organisations into serious difficulties. Only in one of the projects actions (workshops etc.) were taken beforehand to integrate project participants from several countries. Five of the projects faced challenges that the interviewees thought were related to cultural diversity. Two of the projects were seen as not affected by cultural diversity even though the differences were seen clear. (Table 1)

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Table 1

Project	Country of implementation	Impacts of cultural diversity	Project outcome
Power plant	Poland	Impacts were seen	Successful
Power plant	Ireland	Impacts were seen	Unsuccessful
Power plant	Germany	Impacts were seen	Unsuccessful
Elevators and escalators	United Arab Emirates	Impacts were seen	Successful, better than expected
Elevators and escalators	Russia	Impacts were seen	Successful
Development of policy tool (two consecutive projects)	Finland, Germany, Belgium, United Kingdom, Spain, Italy	No impact in project	Successful, better than expected

Management of negative risk has conventionally been stressed more intensively. Positive risk and this type of thinking overall might not even be very suitable for traditional projects. However, cultural diversity can be seen very clearly having positive or negative impacts on projects. There is a need to develop uncertainty management that the positive impacts are taken into notice more effectively in projects. On the other hand there is a need to understand better how and when the impacts of cultural diversity are essential in projects and especially for project outcome.

Theories concerning risk management and culture have been used as a theoretical background in this research. As stated before cultural dynamics deal with many arenas of project management. The transition from risk management to uncertainty management can be seen, but the theory concerning uncertainty management is not fully developed. The purpose of this research is to bring new knowledge and ideas on developing uncertainty management. There is a need of gaining more knowledge concerning how cultural diversity affects on projects overall. Several researches have been conducted, but they show contradictory evidence.

In this paper is presented some insights to relationship between uncertainty management and cultural dynamics. In-depth retrospective interviews were used to track major events during project implementation. These events revealed a group of contextual and intermediate variables that have affected during project implementation. Issues concerning management and the relationship between management and outcomes were analysed together with other members of the research group. Cultural dynamics exist and cultural diversity can be a resource (positive and negative) in traditional projects.

2   Cultural dynamics relevance in projects

Multicultural teams have advantages from many points of view. As environment is coming more complex, having greater uncertainty, and changing faster, the multicultural teams might be able to better answer to external challenges. Multicultural teams have a wider range of viewpoints, so there can be found solutions for the old problems. However the diversity causes interpersonal conflicts and communication problems. The multicultural team need to actively manage the project process and the challenges cultural dynamics bring, to use the possible lost of resources and time, missed opportunities and disappointing outcomes (Schneider and Barsoux, 2003; Chevrier, 2003).

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Figure 1 represents the rough division concerning the effectiveness between culturally homogenous multicultural teams. Multicultural teams have potential to become the most effective, but also the least effective teams (Adler, 1997).
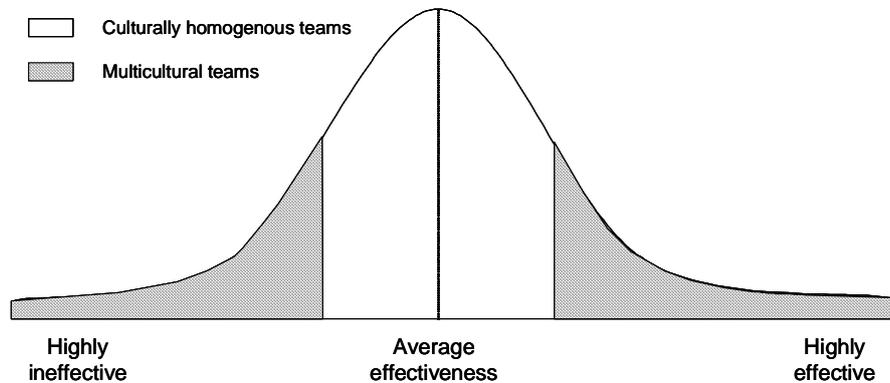

Figure 1   The effectiveness of culturally homogenous and multicultural teams

One definition of culture is that it is a group's response to its environment. Group shares a set of beliefs and values that exist deeply in individuals minds (Hofstede, 1991). Cultural differences can be diagnosed at three different levels; behaviour and artefacts, values and beliefs, and underlying assumptions. First level can be seen visually, for example clothing, food, language etc. Cultures however have deeper levels that even the individual belonging to the culture cannot describe (Schein, 1985). These levels of culture are seen as generic thus to exist in other dimensions of culture, like professional culture (Schneider and Barsoux, 2003).

The belonging to a group creates the feeling of safe and comfort to an individual (Schein, 1985). This feeling gives group better possibilities to response the challenges that are coming outside, also break the comfort zones and create new solutions to problems. Group might also act defensively against outsiders and for example deny all interventions against its culture, keep the group as transcendent (Schneider and Barsoux, 2003).

Cultural differences exist in every project, national or multinational. Nationality is only one dimension of culture. Other dimensions affecting also in projects are for example organisational and professional cultures. Cultures do not stay static, but they change over time. This change is usually very slow, but very significant external factors can force the culture to change radically, otherwise the culture disappear. There might sometimes be a misunderstanding between when the culture itself changes and when only the visible factors change. The change might only be seen afterwards (Schein, 1985).

Several researches have shown that cultural diversity impacts on projects, practitioners believe that cultures impact among other things. Even though it has been shown that cultural differences have impacts on projects the reasonable doubt need to be arisen. Cultural differences exist, but they do not always affect on work in projects or project outcomes. In this paper, the issues that are commonly interpreted to relate cultural diversity are been investigated. Interpretations might be misleading and the impacts that are claimed to arisen from cultural diversity might have other sources like gender, age, differences in personalities and institutional environments.

Cultural differences can have various impacts in projects. They vary during different project phases and between project types. Impacts can be negative, positive, and everything between. Evidence from the conducted case studies showed that sometimes there was not any impact at all even if the

differences existed. Big question is when these impacts have an importance on project outcome either it is negative or positive.

The term cultural dynamics is used here to include the assumption that cultural differences have an impact either negative or positive in projects if no special actions for managing cultural diversity are taken. However the direct connection cannot be drawn between existing impacts and project outcome. Of course positive impact means positive outcome of work, for example innovative project team can make technological breakthrough, but this might still mean that the original objectives of project are not met, for example marketing goals. Cultural diversity is only one factor affecting on project outcomes and yet its significance is not clear.

Projects are restricted by time and changing culture or affecting on it takes time. Project might end up having its own project culture that covers the impacts of other cultures. In a project as well as in other organisations only the visible factors of cultures can be changed and not trying to change the deeper levels of cultures; values and beliefs, and underlying assumptions. The case studies showed that this might cause a danger to undervalue the impacts of culture in following projects. Project participants might think that problems were already solved earlier. Dynamic nature of cultures lead that the possible changes that appeared are not static either.

3   Appliance of uncertainty management

Uncertainty is the closest related character of risk. Here the uncertainty consist both probability and impact of a specific event. Some definitions include these factors already as part of a concept risk and use word uncertainty to describe both positive and negative sides of risk, hence threats and opportunities (Hillson, 2002). In practice uncertainty management is not generally in the level were even all the risks are recognised. The experience from large and complex projects has shown that there is also a general shifting among project management practices towards multi-discipline approach. Besides technical competencies and managerial skills the project management need to have skills related to leadership and socio-cultural aspects (Jaafari, 2002).

Uncertainty contains risks and their impacts, which either can or cannot be seen beforehand (Miller and Lessard, 2000). There are several types and sources of uncertainty. Krause and Clark (1993) have described the main types as error, imprecision, variability, vagueness, ambiguity and ignorance. Because the variety of uncertainty the management needs tools to relieve the managing task. At the same time the diversity makes uncertainty to be very difficult to model. Christensen and Kreiner (1991) have suggested following classification of uncertainty:

1. The operational, appreciable, foreseen.

2. The contextual, unforeseen events.

Some sources use the word equivocal or ambiguous to describe second type of uncertainty. Unforeseen events mean both events that were missed for some reason when uncertainties were identified, and events that would have been impossible to foreseen (e.g. some natural disasters, impacts of changes in institutional environment). Part of uncertainty management is to act when unforeseen risks unfold (Miller and Lessard, 2000; Christensen and Kreiner, 1991).

The risk can have positive or negative impacts on projects (Hillson, 2002). It is necessary to distinguish risk and its impacts, because risk has generally been connected only to threats hence negative impacts. This way the significance of positive impacts can be emphasised. Project management is nowadays quite well aware of different risk categories, but the impacts of some risks are far from clear. Sometimes the impacts are fully known and calculable beforehand, but often the impacts can only be seen during the project. In figure 2 the difference between risk and uncertainty, hence risk, probability, and impact, is being characterised at the one point in time.
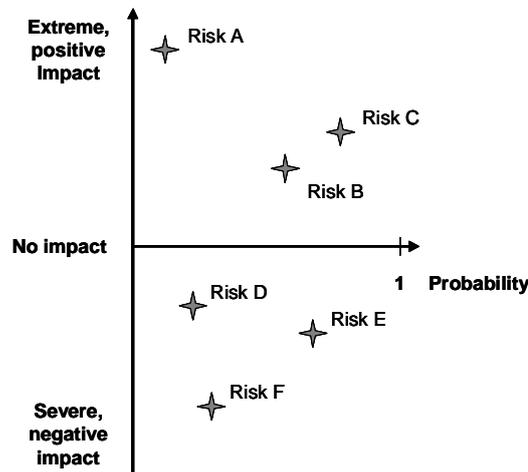

Figure 2   Relationship between risk and uncertainty

One of cultures' characteristics is that the impacts cannot fully be seen beforehand. Cultures are linked to many external factors, for example legal, environmental and social environments. Cultural diversity is not necessarily a risk at all hence no positive or negative impacts can be gained or prevented. Often cultural diversity is not seen as risk at all, not positive or negative. But when cultural diversity is considered to be one of the risk factors, the obvious starting point in projects is to recognise the nature of cultural diversity and cultural dynamics, hence risk of cultural diversity and its impacts. The recognition of cultures as positive risk should not be forgotten.

Risks in projects can be classified by source of risks. Inherent and externally generated risks are managed more effectively compared to internally generated risks. However Barber (2005) shows that the significance of internally generated risks are underestimated. One reason why internally generated risks are not managed on the way they should is that they rise mainly from behaviour.

The origin of internally generated risks is in the project organisation or its host and they are affected by rules, processes, structures, actions, decisions, behaviours or cultures. Behavioural related risks are often very sensitive and intangible to analyse and therefore ignored in many projects. Analysing of this type of risks is a key to drive rapid organisational responses to changes in the environment. (Barber, 2005; Baloi and Price, 2003). Some cultures are more permissive when giving and accepting feedback than others (Schneider and Barsoux, 2003).

Cultures' constantly changing nature is a challenge for uncertainty management. Uncertainty management overall is changing towards dynamic process, but still the tools and practices are largely missing. Briefly, while cultures change the uncertainty management need to be a dynamic process as well. Major discussion still is either both sides of risk, positive and negative, should be valued at a same time. Risk is a twofold concept, which means that strictly speaking there are not threats without opportunities. However common practice is concentrated heavily on managing risks as a threats and adding opportunities to that thinking might not be very easy.

Actualised risks are expected to cause extra costs, time overruns, and quality problems. This is a view seen from a traditional thinking in risk management. Hillson (2002) has approach existing uncertainty management by looking how well it could fit to manage opportunities. Advantage when managing both threats and opportunities at a same time is that they both get an equal status. Also during project's early phases, before the actual signing of the contract, the opportunities might have been looked too optimistically. On the other hand human perception of risk does not take both sides of risk into notice in unison (Rundmo, 2002).

Besides risk being physical phenomena, it is also social issue. There are variation how different people perceive risk. Origins of this variation are both in personalities and cultural background. Hofstede's (1991) research showed significant differences between nations of how they perceive risk. Macgill and Siu (2005) just brought out that risk becomes an issue when people choice to deal something as an opportunity or threat.

Current risk management processes are only partly adequate when managing the opportunities (Hillson, 2002). Project Management Institute's PMBOK (2000) categorise risk management in six different phases; risk management planning, risk identification, qualitative risk analysis, quantitative risk analysis, risk response analysis, and risk monitoring and control. Hillson (2002) concluded that both threats and opportunities could be managed simultaneously in a same process, only new risk identification techniques and response strategies are proposed.

Managing cultural dynamics has been a challenge during several decades. Several researches have been made and many practices have been developed to manage cultural dynamics beforehand and during the project process. However in uncertainty management, cultural dynamics have not been on view. One of the rare views is presented by Vonsild (1996). She recommended the following actions that need to be done to improve multicultural project performance:

§   To develop understanding of each other's cultural angle

§   To find out risks that are needed to be prepared for and opportunities to gain

§   Jointly define project goals and schedule

§   To define organisational structure for the project that takes cultural differences into account

Vonsild (1996) continues with the list of conflict areas during project process, where new mechanisms need to be created:

§   To coordinate information exchange and work progress

§   To deepen mutual understanding between the parties involved

§   To deal with conflicts that might arise

Vonsild's list is already one decade old but still these issues are relevant and without practical applications. Project managers have at present moment tacit knowledge of how to deal with cultural dynamics. Cultural diversity is on the other hand a source of very uncertain risk, but also an ingredient in project management to help managing the objectives.

Kets de Vries (2004) has written that first managers have to become aware of themselves, how and why they do things the way they do. After that they can decide if they want to continue that way or perhaps change the course of actions. Before reacting to the effects of cultural differences in projects there is a need to understand the way managers unconsciously behave.

4   Managing uncertainty related to cultural dynamics

Seven cases were investigated to find answers what is the role of cultural dynamics in uncertainty management. The first two cases (which actually consist of two sequential projects) was a research project with participants from six European Union countries: Finland, Germany, United Kingdom, Belgium, Italy, and Spain. The successful outcome of the first project (1996-98) led to continuation of the work, and to an even more successful project (2000-03). The objectives were to research, develop, and test integrated land use and transport policies, tools and comprehensive assessment methodologies for sustainable strategies in European cities. The work itself was mainly conducted separately in each participant's home country, although the partners met every third month in participative countries in turn. Half of the finance came from European Union and other half from participants' home countries. There were many stakeholders financing and participating in the project.

Other cases were power plant projects executed in Poland, Ireland and Germany. The project organizations consisted besides Finnish employees, Polish, Irish, German, Turkish, Italians, Portuguese, and Yugoslavian employees. Nationalities represented client, partners, different contractors and subcontractors. Cultural diversity was seen as a threat and it was managed by different type of actions; joint workshops, selection of key personnel etc. Despite a multitude of difficulties and setbacks during the projects one of the projects was successful, the other two fail in many areas.

Finally two cases concerning elevator and escalator deliveries into two high-rise buildings in Abu Dhabi and Moscow were investigated from the sub-contractor's viewpoint. These two projects had participants for example from Finland, Russia, Turkey, United Kingdom, Canada, South-Africa, Egypt, India, and other Middle-East countries. These cases were successful, but the host organisation felt that more could have been done to make the most of the multicultural workforce.

In-depth retrospective interviewing was used to track major events during project implementation. At the same time there was found traces of project managers' cultural perceptions and used uncertainty management practices. The project managers of these projects were interviewed three times and their counterparts (from other ethnical background) were interviewed once. Each interview lasted between one to one and a half hours. All the interviewed project managers were Finns and the interviews were conducted in Finnish, or in English, which was the language used in many of the case projects (German was used in the power plant in Germany). In addition to interviews, secondary data such as project reports, company reports, and newspaper articles were used in data collection.

Several issues concerning cultural dynamics were revealed, both clarifying and confusing. As a subject, cultural diversity raised many comments and lead to exhilarated conversations of project manager's current and previous experiences. *Project type* was found essential when considering what kind of emphasis the management of different sides of uncertainty should have. Research and development projects were innovativeness were needed, the cultural diversity are taken in many cases as granted. Cultural diversity is seen as an opportunity, but it is rarely managed. In traditional type of projects the diversity is seen as a threat because for example the leadership and management styles and work practices vary. Miscommunication creates the need for time expansions, causes extra costs and lower quality.

Besides project type the closeness of project team members affects on how cultural diversity affects in projects. If ethnically homogenous teams work geographically separate phases and interact rarely or not at all the cultural diversity plays significantly different role. Cultures still exist and have

impacts, but when face to face contacts are not essential to implement the project the significance of cultural diversity diminishes.

Project manager in one of the other projects was seen international cooperation as very important to their research. Required knowledge for this type of project was not found from only one of the participating companies. Participants were good at one specific area and common objective among partners were easily seen. Some of the partners have been working together earlier and all of them had worked before administratively similar projects than this one. Project manager first said that cultural differences did not exist in the project. During the interviews this issue was coming clearer. Project manager himself admitted that he had had some prejudices against other in advance unknown partner. The same project manager pointed out that to get new and fresh ideas people have to go abroad. Project manager was confident that cultural diversity can be an advantage.

In one of the project special actions were taken beforehand to overcome possible obstacles caused by cultural diversity. In a delivery project the cultural diversity are faced inside the own project organisation as well as from external sources. Possible external cultural as well as institutional risk was left aside. In fact the company's subsidiary was used as a 'tool' to smoothen cultural risk in Poland. This was a conscious decision from Finnish side of the project, but the people in subsidiary were not necessarily informed that they have this kind of role.

There is a strong need to develop uncertainty management to take better into notice also the opportunities. Social factors have also been neglected. When these two reasons are combined it makes perfect sense to add cultural diversity as a part of uncertainty management. First cultural diversity of project participants creates threats and opportunities. Secondly risks are valuated in many cases using subjective estimations. Individuals and their perception of risks affect on risk identification and estimation.

5   Conclusions

Uncertainty management is in constant development to answer real world challenges. On one hand the challenge is to recognise the source of uncertainty in very complex project environment. On the other hand the need to understand the consequences of risk has increased its meaning when competition in global market is coming tougher. Cultures are very dynamic, which creates another challenge to uncertainty management. Current tools do not fully take into notice the dynamic perspective of any risk or if they do the process is very troublesome.

Cultural dynamics causes challenges in projects among other internal and external factors. However, some projects can benefit from the diversity. Cultural diversity need to be managed to gain the full advantage from it. Before cultural diversity can be managed, the issue needs to be discussed because of the sensitive nature of cultures. In many cases the awareness already opens people's eyes to face cultural diversity more openly.

Managing cultural dynamics can actualise in many different levels; human resource (hire culturally sensitive employers, teach about other cultures and own, send people abroad), uncertainty management (define impacts and uncertainty, influence on uncertainty and prepare for impacts, conflict management), and organisational structure. This paper raised the question if cultures' impacts can be managed using uncertainty management and its tools. More research needs to be done to clarify where the uncertainty lies in specific projects, for example investigate similar size and type of projects in the same industry. In other words, have more common features between cases to reduce the 'noise' from too many distinctive factors.

The cases presented many different perceptions on cultural dynamics. In one of the other project the cultural diversity was seen as opportunity to gain innovativeness. In this type of project this expectation is very natural even if conflicts sometimes occur. Work is conducted in several locations by nationally relatively homogenous teams. Coordinator's multicultural competence is essential when mediating the connections between project teams. On the other hand cultural dynamics were seen as a threat rather than opportunity. Previous experiences had shown that cultural dynamics should be taken seriously and this time special actions were performed. Still projects faced conflict but they were solved successfully.

The impacts that cultural diversity creates can be taken into notice on many areas of project management, but in uncertainty management it is a new area. Consideration of cultural dynamics requires that uncertainty management need to be taken to another level were also positive impacts are under consideration. Traditional methods in different phases of risk management focus on negative issues.

Small number of cases and only scratching their surface can give a hint about the interesting phenomenon, but the cases were in many ways different to make exact conclusions. The relationship between cultural dynamics and project outcome remains unclear. Culture can be taken as a part of uncertainty management, but prerequisite for that is to include also the opportunities, not just threats.

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