VIRTUAL Projects: Building the Bridge Between Best Practices and Practiced Practices

Per Svejvig
Aarhus University

Trine Hald Commisso
Roskilde University

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Svejvig, Per, Aarhus University, Haslegaardsvej 10, 8210 Aarhus V, Denmark, psve@asb.dk
Commisso, Trine Hald, Roskilde University, Universitetsvej 1, 4000 Roskilde, Denmark, trinehc@ruc.dk

Abstract

Virtual projects are common with global competition, market development, and not least the financial crisis forcing organizations to reduce their costs drastically. Organizations therefore have to place high importance on ways to carry out virtual projects and consider appropriate practices for performing these projects. This paper compares best practices with practiced practices for virtual projects and discusses ways to bridge the gap between them. We have studied eleven virtual projects in five Danish organizations and compared them with a predefined list of best practices compiled from the literature. The research questions are “What are the practiced practices compared with the best practices?” and “What can we learn from this comparison?” Our findings show that the best practices are followed to a certain extent, but also demonstrate a severe lack of diffusion and adoption, which means that the best practice knowledge has not permeated sufficiently to the practice. Furthermore, the appropriate application of information and communication technology (ICT) remains a big challenge, and finally project managers are not sufficiently trained in organizing and conducting virtual projects. The overall implications for research and practice are to acknowledge virtual project management as very different to traditional project management and to address this difference.

Keywords: Virtual projects, Project management, Virtual project management, Best practices
1 Introduction

Virtual project teams working together across different locations, organizations, and countries are common. The global nature of business, cost pressure, global competition and market development, mergers and acquisitions, outsourcing, and offshoring are all important drivers of virtual projects (Monalisa et al. 2008; Reed and Knight 2010). This trend is intensified by the global financial crisis with organizations focusing firmly on reducing costs, as virtual projects can potentially save a substantial amount of travelling time and travelling costs, and the emergence of relatively cheap information and communication technology (ICT) (Kuruppuarachchi 2009). Organizations therefore have to place high importance on ways to carry out projects and practice project management in the context of virtual projects with their embedded risk and complexity (Anantatmula and Thomas 2010).

For the purpose of this study, a virtual project is defined as a temporary endeavor with a project team consisting of people working towards a common goal while separated by geographic distance, time, and/or location (Anantatmula and Thomas 2010; Dubé and Robey 2008). Virtual projects are related to global projects, typically with cultural diversity (Anantatmula and Thomas 2010), but also encompass local projects in a single country with dispersed teams at different locations. Virtual projects are furthermore highly related to the concept of virtual teams, and the literature presents these concepts as at least overlapping and sometimes even interchangeable (Ebrahim et al. 2009; Min et al. 2011).

The successful completion of virtual projects has been discussed for several years and attempts have been made to explain why some virtual projects are successful while others fail. This line of research focuses on best practices (e.g. Staples and Webster 2007) or critical success factors (CSFs) (e.g. Goodbody 2005), which we understand as recommendations for a standardized best way to organize and conduct virtual projects (adapted from Axelsson et al. 2011). Best practice and CSF research is often based on single or multiple case studies in which the factors are formulated from the cases. However, best practices have also been criticized for being problematic shortcuts that do not work in situated practice (Wagner and Newell 2004) because they overlook situational and contextual factors (Howcroft et al. 2004). We define practiced practices as the actual situated practices taking place in projects.

We were curious about this potential gap between best practices and practiced practices and how to bridge this gap. The study was undertaken by analyzing the practiced practices in eleven virtual projects in five organizations and comparing them with a predefined list of best practices compiled from the literature, the research questions being “What are the practiced practices compared with the best practices?” and “What can we learn from this comparison?” The study differs from mainstream research about best practices/CSFs by starting out with a predefined list of best practices instead of formulating one, as most studies do. The study furthermore addresses the call by Ebrahim et al. (2009: 2664) to combine a literature review (e.g. about best practices) with case studies in different organizations in order to develop a more comprehensive and nuanced understanding of the organizing and conducting of virtual projects. Our findings show that best practices are followed to a certain extent in virtual projects, but they also demonstrate a severe lack of diffusion and adoption, which means that the best practice knowledge has not permeated sufficiently to the practice. Furthermore, the appropriate application of information and communication technology (ICT) remains a big challenge, and finally project managers are not sufficiently trained in organizing and conducting virtual projects.

After this introduction, the paper is organized in the following way. The next section compiles the predefined list of best practices. The research setting and approach are reported in the following section. The empirical findings from our cross-sectional study of 11 projects are then presented. Finally, we discuss the lessons learned and conclude with statements about implications and further research.
2 Best practices for virtual projects: a literature review

This section presents recommendations from the literature concerning how to execute successful virtual projects. We conducted a search of the academic and practitioner literature using Business Source Complete, ProQuest ABI/Inform, and Google Scholar. The goal was to find some representative papers with a main focus on best practices and CSFs. The papers were coded in NVivo (Bazeley 2007).

The presentation and discussion of best practices for virtual projects are not without drawbacks, especially related to sketching the boundary between traditional (or co-located) projects and virtual projects. “The creation and management of a virtual team [project] have many aspects in common with creating and managing a traditional team” (Monalisa et al. 2008: 50). Furthermore, virtual projects vary in their degree of virtuality, ranging from traditional co-located to fully distributed, although often exhibiting a mixed mode of interaction and referred to as hybrids (Oshri et al. 2008: 23-24). We will therefore often encounter a gray zone with these hybrids, but the departure point for the best practices presented here is virtual projects showing some degree of virtuality. So, although some of the recommendations are not different from those for co-located projects, they tend to be enlarged because virtual projects may be more varied and complex than traditional co-located projects (Kayworth and Leidner 2000: 184, 192). An example is information and communication technology (ICT), which becomes even more crucial in virtual environments as this is the foundation for continuous communication in virtual projects (Carmel 1999) and metaphorically speaking the lifeline for the projects.

Figure 1 below summarizes the best practices compiled from the literature divided into five categories (extending structure proposed by Kayworth and Leidner 2000):

![Figure 1: Five categories of best practices for virtual projects](image)

The five categories are briefly described below.

**Communication:** There is no doubt that communication is a vital issue for both co-located and virtual projects. Most communication is expected to be virtual, by means of ICT, but many studies highlight
that face-to-face meetings are crucial in virtual projects (Carmel 1999; Oshri et al. 2008). Team members have to build personal face-to-face relationships and establish mutual trust, which are part of a necessary socialization process. The face-to-face meetings might start with a co-located kick-off but have to be maintained throughout the project at regular intervals, such as once every three months (Oshri et al. 2008: 32, 35). The fact that virtual projects lack rich face-to-face interaction has to be compensated for by “rich virtual interaction” facilitated by ICT (Kayworth and Leidner 2000). Finally, a shared language, typically English, is a critical foundation for all kinds of communication, and language barriers are a real challenge that has to be overcome. English language lessons are a feasible and necessary approach, especially in situations in which the English skills are low (Carmel 1999; Oshri et al. 2008).

Culture and cultural differences are often mentioned as a factor that is more important in virtual projects than in co-located ones, despite individual differences dominating cultural differences according to Carmel (1999). However, awareness and strategies for navigating through cultural differences are needed (Goodbody 2005). The concept of cultural differences is often boiled down to national cultures, but this is too limited an account and national cultures might not be that important. Other cultural differences are: (1) organizational cultures with different management styles, company values etc., (2) professional cultures such as doctors and nurses, (3) functional cultures like sales and production, and finally (4) team cultures, where teams develop their own intra- and interorganizational subcultures (adapted from Carmel 1999: 57-79). Cultural differences should also be considered when forming teams (Kayworth and Leidner 2000); do we want homogenous teams (e.g. only team members from India) or do we aim to mix teams by relocation and rotation (Oshri et al. 2008)?

Technology is the glue of virtual projects and there is a wide variety of tools that can be used in virtual projects (see Ebrahim et al. 2009: table 7, 2661). One of the biggest impediments to the effectiveness of virtual projects is the implementation of technology, so both careful selection and careful implementation of technology (mainly ICT) are of the utmost importance. The ICT infrastructure must encourage team members to share information easily and freely (Goodbody 2005); videoconferencing, groupware, instant messaging, and other cooperative tools are obvious candidates (Ebrahim et al. 2009), but also shared databases (Oshri et al. 2008). Virtual projects are often global, encompassing different geographical regions where the knowledge level and availability of ICT differ greatly, and this has to be taken into account (Kayworth and Leidner 2000). For example, the lack of a reliable and high bandwidth network is a problematic restraining force on communication (Carmel 1999), so we have to consider the barriers to ICT (Kayworth and Leidner 2000).

Project processes and management are a natural part of conducting projects irrespective of whether they are virtual or co-located projects. However, virtual projects need specialized management techniques because of the dispersed team nature, which will impact on the organizational structure of the project (e.g. task allocation across individuals and teams) and the way in which project processes such as scope management, time management, risk management, etc. are executed (Carmel 1999; Kayworth and Leidner 2000). Formal training of team members has to be considered and can embrace such diverse areas as cultural differences, English language, team building, using ICT for virtual cooperation, and virtual project processes; this has of course to be combined with any domain and technical training needed in the given virtual project (Carmel 1999; Powell et al. 2004). The recruitment of team members has to be taken into account, as Oshri et al. (2008: 47) state: “we propose that managers consider staffing dispersed teams based not only on their set of skills but also on their shared past experiences.” Finally, relocation and travelling between sites to build bridges between teams and sites should be considered (Carmel 1999).

Socialization is the last of the five categories and probably the most downplayed topic in virtual projects. Socialization activities are so embedded in our everyday life (Berger and Luckmann 1966) that we forget to pay them special attention in virtual projects, but they are essential in order to create trust and cohesiveness (Powell et al. 2004). “You can’t have a beer over the internet” (Larson and Gray 2011: 401), so virtual socialization has to be taken into consideration, e.g. to enable social spaces for one-on-one interactions (Oshri et al. 2008), but also to combine the virtual meetings with periodic
face-to-face meetings (Kayworth and Leidner 2000). Part of the socialization process is to establish and maintain shared values, identities, and norms, and use “substitutes for socialization” such as the development of standard project processes and shared databases for knowledge exchange (Oshri et al. 2008).

The five categories – communication, culture, technology, project processes and management, and socialization – are all important topics that virtual projects have to consider. This provides an underlying foundation for our empirical study, which will be revealed in the next section.

3 Research methodology

To answer our research questions we studied 11 virtual projects in 5 Danish organizations in a cross-sectional qualitative study (Bryman 2008) performed in spring 2011. The size of the organizations varies from around 30 employees to 15,000+, and they are engaged in manufacturing, financial services, and IT services. Of the virtual projects 9 are IT projects while the remaining 2 are new product development projects. Most of the projects are rooted in Denmark, cooperating with teams in China, Dubai, Hungary, India, Italy, the Netherlands, and Sweden, and only 1 project is outside Denmark (between China and Hungary). The selection strategy for the cases was maximum variation (Creswell 2007), such as company size, local versus global project, industry segment, etc., as this fits well the comparison with best practices formulated from multiple cases. However, we were constrained in gaining access to the field and more variation would have been desirable, e.g. there is a predominance of IT projects.

We conducted 27 semi-structured interviews across the 11 virtual projects involving project managers and team members (typically more representatives per project). The interviews were centered on the themes “what is successful in virtual projects?” and “what is challenging in virtual projects?” but we were open to diversion into pathways not originally considered (Gray 2004). The duration of the interviews varied from 25 to 85 minutes, and they were transcribed verbatim.

Qualitative data analysis was carried out in NVivo (Bazeley 2007) with an emphasis on the understanding and interpretation of the interview accounts (Walsham 2006). The coding scheme was derived from the five categories from the previous section. The most discussed theme at an aggregated level was project processes and management (25) followed by socialization (15), communication (14), technology (11), and finally culture (8) (the number in brackets shows the frequency with which a specific category was discussed). It is surprising that culture is the least discussed theme, but this might be due to 6 out of the 11 eleven projects being local Danish virtual projects.

4 Practiced practices in virtual projects

This section presents the main points raised in our findings using the framework from Figure 1. We describe our findings where we believe to be most useful for the overall understanding, acknowledging that the five categories of the framework intertwine.

Communication: Several people argued that communicating virtually took longer than when they communicated with co-located colleagues. To move within a short physical radius and receive an immediate response from a colleague who was in physical proximity was far easier than having to formulate the question in writing and send it by e-mail, or check via an electronic calendar whether the person was available and then dial the phone number.

It’s certainly easier to just run down the hall…and discuss a problem than it is to sit down and formulate an email or just pick up the phone for that matter. (Assistant Project Manager, Organization B)

In order to avoid having to wait for an answer, they compiled their inquiries (Organization E), they tried to solve the issue themselves, or they settled for a less qualified response from a colleague in
close physical proximity. Conversely, a team member mentioned how meeting virtually could be more efficient:

I also think that it offers opportunities: that you over the phone very quickly can get hold of each other, rather than you have to physically meet each other. (Assistant Project Manager, Organization B)

Some teams prepared a formal communication plan that specified who should be informed about what, when, and through which media. The project managers agreed that virtual working required more planning, structuring, and follow-ups. In projects in which the team worked across different time zones this fact was taken into daily consideration and the work planned accordingly. A Danish project manager explained how she was aware of the need to send her request before noon local time while her team in India was still at work, knowing that otherwise she would have to wait for at least 24 hours before receiving an answer (Organization A).

A key challenge for the project managers was to ensure that their distributed team members were in close contact. This was a particular issue in global teams in which team members found it difficult to make the first contact. The project managers had to emphasize the importance of continous communication, especially at the beginning of the project, and constantly encourage their team members to make immediate contact with their distributed counterparts who had the knowledge they were looking for. Face-to-face workshops at the project start-up and getting to know each other along with the project managers’ conscious focus on communication improved the team communication. Most of the interviewees expressed a firm wish to communicate face to face, as this was their preferred mode of communication, and they were interested in meeting face to face as often as possible.

The interviewees commented on how language barriers and cultural differences led to communication misunderstandings. An engineer reported that his personal learning from working in a virtual team was to ensure that his message had been received and understood correctly (Organization A). In one project, counterparts from each location were appointed at each video meeting to follow up on instant messaging immediately after the meeting to ensure that everything had been understood.

When working across different nationalities, English was the common language. The varying language skills and accents made it difficult for the team members to understand each other. One talked about how she tried to circumvent the challenges by avoiding phone calls, using video conferencing, and supporting the discussion with drawings, figures, and body language (Organization A). Another considered the fact that they shared the same language challenges to bring team coherence:

... there are six of us from six different countries, so that makes it unique and we have different levels of communication skills; the common language is English, but we speak a different level of English, and I think because of that as well, we are closer in that sense. (Service Consultant, Organization A)

Culture: Team members experienced misunderstandings due to the cultural differences between various nationalities. These were particularly evident between the two clusters of Asian and European cultures. In the software development projects different attitudes towards development had an impact on the collaboration. For instance, Asian team members did not challenge the specification but accepted what had been outlined. Another example was how “no” as an answer could be disguised in many ways.

To gain a better understanding of these differences, team members were offered cultural training. For the Chinese team in Organization A, a one-day seminar took place once a year. Training was considered to be a starting point for understanding patterns of action but not enough: “you cannot expect this kind of thing to be magic,” as one project manager commented (Organization A). Cultural understanding and virtual communication were considered to be learning by doing. Likewise, a Danish team member criticized the cultural training for being too stereotyped and not reflecting the actual well-educated, skilled, and experienced employees (Organization D).
Team culture was another issue that was brought up. When a project faced problems it often created a “them-and-us” culture in which the distant members were blamed and that affected team coherence. Some teams were very conscious about trying to avoid this division (Organization C) and focused on being one team with a shared goal:

… because that is an issue you have to deal with. I emphasize that we are actually in the same team, we have the same goals. Let’s work together, instead of saying “okay they are different and then we have to do it in this way and they can do it in another way” so let’s make it the same. It’s virtual but again, you are team members by the end of the day. So do not emphasize or focus on the differences; instead emphasize or focus on the common things. (Project Manager, Organization A)

Technology: The eleven teams used a variety of ICTs, for example (1) groupware technology that enables communication between members of the team, e.g. e-mail, instant messaging, audio and videoconferencing, and (2) knowledge repositories that store information, as well as (3) technology that supports work processes, e.g. electronic whiteboards. However, the technology that was commented on the most by the interviewees was videoconferencing.

While telephone and e-mail have been used for decades, the spread of videoconferencing is still at an early stage and for the five companies the use of the tool was relatively new. The attitude towards using videoconferencing for team meetings was positive as it enabled the team to collaborate visually and to interact synchronously. However, the interviewees still missed being able to see each other’s facial expressions and sense each other’s reactions. As one participant explained:

At a video conference or phone conference you can of course discuss the main topics, but you have a limitation of the feeling of the persons, their behavior, and also some messages they can give you with body language and stuff like that. (Project Manager, Organization A)

Several challenges regarding video conferencing were put forward: first, the lack of availability of meeting rooms with video equipment; second, the limited knowledge of some team members about using the equipment; and finally, a more psychological-related issue of self-consciousness in front of the camera restraining the person’s behavior and participation in team discussions.

However, other issues regarding technology were also raised at the interviews, which could be summarized as a wish for having a broad and integrated palette of technology to support the virtual process. One example was technology to support more creative processes. In a physical setting it is relatively easy to use stick-it notes, white boards, physical materials, etc. to stimulate a creative process, but that is very difficult to transfer to the virtual setting and the result might be skipping part of the creative process.

There was a general perception that the technology was not being exploited to its full potential. The use of functionalities could be extended if more training was offered. One project manager explained the lack of training:

But we’ve never really got a proper introduction to what we have to use the tool for, so we’ve mostly just used the chat part of it ... I think the product can do more than what we actually have been made acquainted with. Which we could easily grasp if we got some training in using it. (Assistant Project Manager, Organization B)

The findings revealed a gap between availability and usability that manifested itself in various ways. Consequently, whenever the distance between two parties was relatively short (e.g. two locations in Denmark), they opted out of collaborating virtually and chose to hold a face-to-face meeting instead of a videoconference.

Project processes and management: None of the project managers received virtual project management training or a “toolbox” to assist in the management of a virtual project team. Their knowledge was built up by experience and instantiated in each of them. Several project managers were
keen on obtaining such a toolbox and asked for more information on virtual collaboration. A project manager explained it as organizational maturity:

I think the company has not acknowledged that there is a difference whether you sit together or you do not. It requires something else. Something else has to be done, so it is yet to become part of the training program. (Project Manager, Organization A)

In terms of management techniques, the experienced virtual project managers knew how to balance the use of strict rules and the adaptation to the specific team and context. In general, structure and agreements around common processes were considered necessary.

Project managers recognized the importance of being visible. They ensured frequent contact with their team members, always spending time listening and showing interest in the life and work of their team members.

And I have also learned that I must be visible every day to them ... that I take my time and say “well, do you have nice weather in your town?” or whatever I can find and ask about, right? Or “how is it really with this task?” or “how far have you come?” – so that I am interested in those over there and not just say “well, but bye bye.” (Project Manager, Organization B)

Managing information across distance was challenging for the project managers. They found it difficult to ensure that everybody received the same level of information. They were concerned that they as project managers were notified too late about project problems:

I feel very much that I miss the everyday sense of how it goes. I have simply not the sense of the progress, of the project’s well-being, as I would have had if I sat with my team. And so I discover problems too late and am not being prompted by these little things. (Assistant Project Manager, Organization B)

As a consequence, some project managers chose to appoint, formally or informally, a liaison officer at the other location who took care of and paid attention to the team members and reported back to the formal project manager (Organization B and D). Another consequence was that some project managers prioritized regular travel to meet team members up to twice per week. Relocation was frequently arranged, ranging from project managers spending 1–2 days per week at the other location to team members being located for up to 3 months in another country.

Socialization: In all of the projects, the team members were given the opportunity to meet each other face to face at a workshop early in the project. Most interviewees stressed the importance of meeting each other face to face at least at the project start-up and preferably at regular intervals throughout the project. They could not imagine the team collaboration could be successful without having met in real life. In many projects, the team members were brought together in one location for the project kick-off meeting. The meeting could last for several days and contain both project-related sessions (e.g. task and goal clarification) and people-related sessions (e.g. team-building exercises). The interviewees stressed the importance of getting to know each other well, not only the job-related skills and competencies but also the person behind them by exchanging personal information such as family background and hobbies, etc. As one of the project managers explained:

I have learned about the personal contact. It is vital, it must be established. And it is not just to meet each other and hold a professional meeting. No, we have to go out and laugh and cry together and get behind the facade. And it takes time. (Project Manager, Organization A)

Personal experience taught the project managers how crucial it was to arrange formal socialization activities. Moreover, they took the time in a tight meeting program to prioritize informal interaction (Organization D), providing the team members with the possibility to become acquainted with each other in informal settings.
The team members considered the socialization activities to be fun to participate in and useful for the further collaboration. In a team distributed across two locations within the same country, the team members chose to pay for the socialization activities themselves. The advantages of building personal relationships early in the project were evident to the interviewees: it made it easier to contact each other after the face-to-face meeting, the following communication became natural, and it created a common understanding.

5 Discussion

We set out in this paper to investigate “what are the practiced practices compared with the best practices in the literature?” To support such a comparison we have outlined our predefined list of practices from the literature and the practiced practices from our study in the table below. As mentioned previously the statements overlap and intertwine.

<table>
<thead>
<tr>
<th>Best practices from the literature</th>
<th>Practiced practices</th>
<th>Examples of good practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Challenges in practice</td>
<td>Examples of good practice</td>
<td></td>
</tr>
<tr>
<td>Communication</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conduct periodic face-to-face meetings</td>
<td>Some projects underestimate the time required for planning, structuring, and communicating</td>
<td>Consider time zones when communicating</td>
</tr>
<tr>
<td>Establish continuous virtual communication</td>
<td>Virtual contact is difficult to initiate Language misunderstandings due to different levels of English skills</td>
<td>PM encourages team members to make contact</td>
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<tr>
<td>Reduce the barriers using a common language (typically English)</td>
<td></td>
<td>Focus on communication process: confirm that the issue has been understood</td>
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<tr>
<td>Culture</td>
<td></td>
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<tr>
<td>Navigate through cultural differences (national, organizational, professional, functional, and team cultures)</td>
<td>Inadequate training in cultural understanding (national differences) Project overload negatively affects team culture and coherence</td>
<td>Focus on similarities; being one team with a common goal</td>
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<tr>
<td>Consider cultural differences when forming teams</td>
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<tr>
<td>Technology</td>
<td></td>
<td></td>
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<tr>
<td>Select, implement, and utilize a wide variety of information and communication technologies</td>
<td>Shortage of video-meeting rooms Insufficient training in ICT functionality Appearance consciousness restrains involvement</td>
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<tr>
<td>Establish and maintain knowledge sharing (e.g. databases)</td>
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<tr>
<td>Manage differences in ICT among geographical regions</td>
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<tr>
<td>Assess political and economic barriers to ICT</td>
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<tr>
<td>Project processes and management</td>
<td>Lack of virtual project management “toolbox” Insufficient training Enhanced contact with team members Difficult to keep an adequate information level</td>
<td>The experienced PM is visible and emphatic Appointment of liaison officer Relocation of team members to exchange domain knowledge</td>
</tr>
<tr>
<td>Focus on specialized managerial techniques such as formal shared rules and guidelines for communication, etc. Ensure appropriate architecture and task allocation Prepare and implement training of virtual team members Recruit team members based on skills and past experience with virtual projects Consider relocation of team members</td>
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<td></td>
</tr>
</tbody>
</table>
Best practices from the literature | Practiced practices
---|---
Socialization  
Plan and implement socialization activities in order to build trust and coherence among team members  
Focus on shared values, identities, and norms | Socialization activities are reliant on face-to-face meetings  
Face-to-face start-up meetings containing both formal and informal socialization activities

<table>
<thead>
<tr>
<th>Challenges in practice</th>
<th>Examples of good practice</th>
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<tbody>
<tr>
<td>Socialization activities are reliant on face-to-face meetings</td>
<td>Face-to-face start-up meetings containing both formal and informal socialization activities</td>
</tr>
</tbody>
</table>

Table 1: Comparison of the best practices in the literature and the practiced practices

The study shows that several of the findings match the recommendations from the literature. As an example, the best practices advocate for socialization activities and our study highlights how building strong personal relationships is a key to success in virtual projects and shows how these relations are built initially during face-to-face meetings at project start-ups. However, the study also indicates severe challenges in carrying out virtual projects, such as the availability and use of technology, where technology constrains the project processes.

If we look across the studied virtual projects in the five organizations we can point to three important lessons learned, which can be used to build the bridge between best practices and practiced practices.

**First**, there is a lack of diffusion and adoption of the best practices. Many best practices are incorporated in various ways into the different projects and organizations that we have investigated in this study. Overall, though, there is a lack of focus on the diffusion and adoption of practices to improve virtual projects. Good practice is not shared in a formalized and structured manner and diffused throughout the organization. The project managers gradually build up knowledge based on experience of how to manage a virtual project. The maturity of virtual project management appears to be less than the maturity of traditional project management (Andersen and Jessen 2003) and this has to be addressed. However, there is also a big difference between the studied virtual projects and the predefined list of best practices, which should not be seen as universal recommendations leading to successful projects, but instead as conceptual practices that have to be adapted to the situational and contextual circumstances of a given virtual project (inspired by Axelsson et al. 2011).

**Second**, the use of technology is still challenging. The virtual team is dependent on technology for communication and for performing most of the project management-related activities. New improved technology is constantly being developed and could render teams more effective if implemented. However, we do see several barriers, e.g. the closest we can come to a face-to-face meeting in virtual settings is to use telepresence equipment (a substantially enhanced version of video conferencing), but this technology is still very expensive and only one of the studied organizations has a few meeting rooms that are equipped with telepresence. Another issue is discussing Gantt charts for scheduling (see also Svejvig and Fladkjær Nielsen 2010), drawings of complicated models, and such like that need whiteboard sizes instead of 26” or even 52” screen sizes, which is still challenging with today’s technology. Added to this are the challenges of using the available technology and gaining access to the technology. A final comment is that this area did not receive much attention from the interviewees when it was working, as it did in some projects, but when the technology or implementation is inadequate it becomes the most criticized category.

**Finally**, leadership in virtual projects is very different from leadership in traditional projects, and this has to be acknowledged both at the individual level (project manager and team member) and at the organizational level. As Caulat (2010: i) states, “leading virtually needs to be considered as a new discipline of leading” and this was sensed throughout the study of the different projects. This theme is related to the diffusion and adoption of best practices in general, but is so important that a separate focus is needed. A project manager expresses that managing and leading virtual projects becomes very different from managing and leading traditional projects because, as he says, “my threads do not reach out there [in India]...and I fear that things can be derailed before I detect it” (Project Manager,
Organization D). This means that we have to rethink management and leadership in virtual contexts, which is a very big challenge that extends far beyond the mere instrumental disciplines often discussed in project management.

6 Conclusion

This paper has examined best practices in virtual projects using the framework in Figure 1. We provided a literature review of best practices and compared it with the empirical findings from five Danish organizations. Assessing the areas of congruence and incongruence, we conclude that many practices are similar in the literature and in practice, but there is still a gap to be bridged. We highlight three lessons learned: a focus on the diffusion and adoption of practices, appropriate application of technology (ICT), and finally training of project managers in virtual leadership.

The study contributes to an understanding of the adoption of best practices in virtual projects and provides insights into practiced practices. The identification of a gap between the best practices in the literature and the practiced practices and the identification of lessons learned are the important contributions of this paper. Our study indicates that the organizational maturity in conducting virtual projects could benefit from being enhanced. Future research should examine how this maturity is attained. Our study also revealed best practiced practices in contextual situations and we suggest future work to examine how this best practice permeates to knowledge in order to provide a deeper understanding of the diffusion and adoption of best practices in virtual projects.

The findings in this paper are relevant not only to the five participating organizations but may also provide other organizations with insights into conducting virtual projects. The paper helps practitioners understand the need to recognize virtual project management as very different to traditional project management (see also Caulat 2010; Khazanchi and Zigurs 2006). We are inclined to suggest that strategic decisions to prioritize organizational support and investment in virtual projects in terms of training and appropriate ICT are required to complete the transition from traditional project management to virtual project management. These organizational actions are likely to facilitate the diffusion and adoption of best practices.

The limitations to this case study point to the fact that it was conducted in a Danish context with the majority of the studied projects being IT projects. These limitations may have an influence on the generalizability of the findings and need to be accommodated by examining best practices in virtual projects in other countries and settings other than IT.

References


