Exploitative Learning in Inter-Organizational Projects: Evidence from Dutch Infrastructure Practices

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Abstract

Purpose – How learning is facilitated in inter-organizational projects remains underdeveloped in the literature. The aim of this study is to focus on viewing the relationship between the multiple organizations in a project, from a perspective of the learning aspect.

Design/Methodology/Approach – This research analyses the learning trajectory that occurred in the largest tunnel project in the Netherlands. Data were collected through archival documents, in-depth interviews, and site visits. Answering the research question will be done through inductive research.

Findings – The results indicate that the most significant change that exploitative learning has led to is the change in mind-set. The learning paradox of projects does not play a factor in the learning trajectory present at the GSP project.

Research Limitations/Implications – While the research was conducted in a Dutch context, it is suggested that the findings presented would align with the experiences of construction organizations in other parts of the world.

Practical Implications – The findings have implications for understanding learning in practical project management. The organizations need to focus on learning initiatives on people, and not on the collection of data.

Originality/Value – This research responds to the debate over the learning in projects. Learning stimulates openness and that this has positive impact om collaboration.

Keywords Inter-organizational projects, Organizational culture, Infrastructure construction projects, Exploitative learning, Inductive research, Mind-set change

This research has been carried out by master student Arash Amini Abyaneh from Vrije Universiteit Amsterdam, supervised by PhD candidate Yan Liu from Delft University of Technology, Renske van Nie, Frans de Kock as the project director from Rijkswaterstaat, and Professor Marcel Hertogh from Delft University of Technology as the designer of the learning trajectory.

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1. Introduction

The infrastructure construction industry is a project-based sector with a myriad of actors. It is known to be a mainly locally organized and conservative sector. Doing a project is mainly focusing on delivering on time and within budget, which means that no time is anticipated on learning within the project. In practice, the decentralized and discontinuous nature of infrastructure construction projects leads to broken learning and feedback loops (Gann and Salter, 2000). Therefore, it calls for more research on how learning can be better done in the environment of inter-organizational infrastructure projects.

The research was performed on the construction of the Gaasperdammer tunnel (GSP) project in Amsterdam, the Netherlands. There has been a "learning trajectory" set up by Rijkswaterstaat (RWS), the executive body of the Dutch Ministry of Infrastructure and Water Management, in collaboration with IXAS, a consortium of contractors.

The research will be focused on viewing the relationship between the multiple organizations in a project, from a perspective of the learning aspect. The experiences of actors from both parties will be analyzed and investigated in the inter-organizational project setting. We have the following research question:

"How has the exploitative learning been carried out by the inter-organizational project actors?"

2. Literature review

Section headings within the body text should be numbered sequentially. The wording of headings is at the discretion of the authors.

2.1. Inter-organizational projects

Often conceptualized as temporary organizations, projects are established within and between organizational functions and span organizational boundaries. Temporary organizations in this setting are categorized regarding their intra- or inter-organizational nature (Burke and Morley, 2016). In practice, temporary projects are set up in which multiple organizations work jointly to produce goods and services in a limited amount of time, and multiple knowledge flows coincide (Jones and Lichtenstein, 2008).

Construction projects are a typical example. The implementation of a construction project often involves multiple parties such as owners/clients, contractors, designers, supervisors and suppliers, who establish or maintain partnerships through one or more discrete projects. Project members are deployed from the participant organizations, and cooperate in the construction process. At the same time, it is necessary to ensure that the results of the project are in line with the development strategies of their respective organization's interest. More efforts are needed to understand how the inter-organizational is handled in large infrastructure construction projects.

2.2. Organizational learning in projects

Scarbrough *et al.* (2004) defined project-based learning by conceptualizing both the creation and acquisition of knowledge within projects and the consequential transfer of this knowledge to the "wider" organization and other projects. The concept of "learning paradox of projects" was introduced by Bakker *et al.* (2011) when observing the "transferability" of

knowledge between projects. They emphasized the fact that on the one hand projects are temporary and fluid, thus making them suitable for stimulating and generating knowledge. However, on the other hand, projects are discontinuous and often relatively short-lived restricts the assimilation of this generated knowledge to other projects. The knowledge, in this case, lies with the people themselves and will be assimilated through them to other projects.

The construction industry is often criticized for slow learning or not learning at all (Flyvbjerg *et al.*, 2002; Hertogh *et al.*, 2008). Project-based learning, which is mainly *ad hoc*, requires commitment and continuous investment of time and resources yet is often neglected (Davies and Brady, 2000; Williams, 2008).

2.3. Exploitative learning in projects

Learning in organizations is often categorized into two main types of learning modes: exploration and exploitation (March, 1991). The tension between exploration and exploitation on firm-level has been mostly studied in earlier research (O'Reilly III and Tushman, 2011; Uotila *et al.*, 2009), which is so-called the exploration/exploitation paradox. It became necessary to figure out how exploration and exploitation can be facilitated in inter-organizational relationships in different organizational contexts (Im and Rai, 2008), for example in project settings. More research is needed to study how exploration and exploitation are managed at the project level (Turner *et al.*, 2015).

Exploitation is associated with refinement, control, routinization, local search, efficiency, incremental development, and short-term orientation (Andriopoulos and Lewis, 2010; Junni *et al.*, 2013). Exploitation on the firm level has been studied by prior research. In the project organizing context, exploitative learning focuses on controlling existing project management methods in order to achieve high levels of consistency and efficiency, which is much needed in traditional construction projects. More attention should be paid to the exploitation during production/implementation rather than at the end of the project.

3. Case description

The case selected is the GSP project, a land tunnel between the Amsterdam–Utrecht railway line and the Gaasp River in one crowded area Amsterdam Zuidoost, belonging to the largest infrastructure program in the Netherlands, Schiphol–Amsterdam–Almere (the SAA program). The project was started in August 2015 and plans to be delivered in October 2020. Then, this tunnel will be the biggest tunnel on land in the Netherlands. Three separate organizations, Fluor NL, Ballast Nederland, and Heijmans, joined together and formed IXAS, the general contractor, with the goal of completing the GSP project.

In 2015, just before the opening, the project Sluiskil tunnel was successfully completed and evaluated in collaboration with COB (the Center for Building Undergrounds, Centrum Ondergronds Bouwen in Dutch), a network organization that focusses on gathering, developing and "unlocking" knowledge of underground construction. The results appeared in a publication and were shared via a conference with the sector. This evaluation inspired the GSP project managers also to consider their own project critically. They went a step further than the Sluiskil Tunnel: to start a knowledge project, together with RWS, IXAS, and COB, from the beginning so that experiences are "fresh" immediately collected and shared, which is later called the learning trajectory. There was an ambition to give even more added value if this will not only be done at the end but from the start. In the contract, there was a provision for it: alignment sessions. There is a clear incentive to improve the knowledge sharing between the different parties. The setup and experiences of the first phase were

published in the publication. One of the recommendations was to evaluate the learning: to learn from learning.

4. Research Methods

4.1. Data collection

The data were collected from February to July 2018 through archival documents, interviews and site observations. A book about the learning trajectory at the GSP project gave general insight on the way the learning trajectory has been intended and the way it has been put into place in the project. This book was published by the coordinator of the learning trajectory, COB. The RWS and IXAS project members interviewed were all involved in the making of the COB book. Eleven semi-structured interviews were conducted, among whom, five come from RWS and six from IXAS, five have a technical background, and six have a managerial background. Additional data were sourced from attending weekly meetings held constructed working space for RWS that works on the GSP project in Amsterdam, the construction site visit and having multiple informal conversations with onsite project managers.

4.2. Data analysis

There was significant overlap between data collection and data analysis and they influenced each other. The data analysis was based on the analysis of observations and interviews, on the experiences of the interviewees with the learning trajectory and the project on its whole and on the way the trajectory affected the interviewee. Key practices and phenomena were identified relying on labels that could represent similar descriptions across multiple data sources.

Semi-structured interviews were all recorded, with permission from the interviewees. Then, these recordings were transcribed, and given codes, according to recurring themes. This coding helped to fragment the transcripts according to the chosen themes. Each part of each transcript was thoroughly read and analyzed and classified into codes. Various methods helped to triangulate the empirical findings. Themes that came across in both the transcripts, informal talks and in the COB book were therefore interlinked. The triangulation of methods allowed gaining a reliable and valid view on how the members of both IXAS and RWS experienced the learning trajectory and whether they experienced changes due to the trajectory. The shift of attention might move towards the way people make sense of what happened, and not so much what happened. Only the completely agreed on practices were finally retained.

5. Results

5.1. Overview of learning trajectory process

Project managers from RWS hoped to experience the learning trajectory as an "extra" management tool. They emphasized how the trajectory has allowed them to use. The goal of generating and sharing knowledge did come back in other interviews. The learning trajectory, on the other hand, aims to generate knowledge that can benefit not only the GSP project but also the entire construction industry.

Most projects reflection and lessons learned collection happen when the project is finished. In this case, they are trying to learn and reflect during construction. This was also explicitly mentioned in the following statement: "This means that if the learning trajectory and the project were on a simultaneous line, I would have been able to learn far more interactively." (Interviewee 2).

This aspect of the trajectory itself has led to a more "open" and adaptable project sphere which is described by the interviewees. The fact that this topic is directly taken over from IXAS showcases the "close" and the adaptive relationship these two organizations have. In reality, the trajectory in their experience was put into place by putting everyone in contact with each other.

When asking about one specific thing that he might have learned from the trajectory, the environmental manager from RWS believed there is a more conscious mindset created. This becomes evident when he stated that:

> The good thing about this is that acts are performed more explicitly, because of the realization that acts are noted or are passed onto other projects. Because this leads to unconsciously thinking about the fact of why and how you are doing things. The second important effect is that you create a mindset in which you search after sharing the knowledge.(Interviewee 1)

5.2. Learning in inter-organizational settings

Within RWS, the importance of collaborations is exemplified because of the existence of an RWS "culture", framed as the "alliance culture". This culture is described as being an open culture in which there is an "us" and not a "we" versus "them". The fact that the word RIXWAS was mentioned showcased the relationship between RWS and IXAS. RIXWAS refers to an intertwining of IXAS and RWS. The contract manager from RWS experienced the trajectory as a reassurance of the way RWS is already working. She stated:

> It is a reassurance of the way we were already working. The openness and transparency were already present at RWS, but for IXAS it probably took a bit more effort. It is very brave by IXAS. (Interviewee 7)

RWS set up the trajectory and were partly responsible for executing it. They reflect on their actions and try to alter their behavior concerning the steering of RWS in the project. The project manager from RWS emphasized the fact that a trajectory sets out to allow for a different way of communications to come to exist.

IXAS sets out to be adaptive, resulted in this openness and willingness to share. The program management, therefore, proceeded with caution and ensured a familiar environment where people felt safe to tell about their negative experiences. There were a few meetings arranged such as project start-ups, project follow-ups and other alignment sessions in which both RWS and IXAS were deemed to be present. These meetings allowed the participants to view how the project had been going, which were also aligned with the learning goal that the trajectory set out to achieve.

6. Discussion

6.1. Exploitative learning in inter-organizational projects

Interviewees from RWS and IXAS both had a positive and negative experience with the trajectory. Many managers experienced the trajectory as a positive and as a reassurance of the way that they were already working, be it at RWS or IXAS. However, other aspects of the trajectory could be improved. Their expectancies of the trajectory and their beliefs of the goals reached by the trajectory differed. Therefore, their experiences were partly dependent on these expectations.

Our findings reach an agreement with the concept of "learning boundaries" (Bakker *et al.*, 2011). In contrast to the "hard" procedural and technical side, there are lessons aimed at a professional collaboration and not to catch a full-fledged relationship with "standard" or with legislation. The soft side is often dismissed. The experiences lie mostly with the people, which

would mean that the lessons might not get lost at all. People themselves might be the most extensive knowledge "asset" that can be transferred to other projects. The project shows that the form of tacit knowledge in projects cannot be easily copied and pasted to another project. It can only be brought to other projects through the people that experience the project and its lessons. In that sense, the knowledge lies with practices and can be shared through practices. Some studies suggest that collaboration enhances the exploitation (Scarbrough *et al.*, 2004), while our research found that exploitation can also enhance the collaboration.

According to many of the interviewees, a lot of the same actors in this project will appear in other big projects as well. The past influences the temporary effects of inter-organizational projects (Ligthart *et al.*, 2016). The experience of the project cooperation and the assessment of future opportunity costs are the driving factors for the establishment of repetitive partners by temporary organizations (Ebers and Maurer, 2016). The learning goals might have been reached in the "bigger picture".

However, there is a difference in the way that lessons can be applied to other projects, and that this difference is partly influenced by the level in which one operates in the project. This arises when learning at one level generates new shared practices that are different from practices elsewhere in the organization (Scarbrough *et al.*, 2004). This may result in a situation where the transfer of learning from one context (level) to another becomes more arduous owing to the need to transfer practices which are entirely different to the broader organization.

6.2. Implication for the future

In this case, the involvement of parent organizations was minimal. The organizations need to focus on learning initiatives on people, and not on the collection of data because knowledge resides in the people (Davison and Blackman, 2005; Rubenstein-Montano *et al.*, 2001). The best way to share this knowledge then becomes, through putting a person with his or her experiences, in another project in which the knowledge can be implemented in. It can enable megaproject learning leading to continuous improvement of the ability of the project to meet business goals. Future research would be needed to find out more about possible added benefits of adding involvement of the parent organizations in a similar learning trajectory.

7. Conclusions

In this research, we investigated how exploitative learning was promoted on the project. The learning trajectory has been experienced generally positively. Learning helps better understand dilemmas and their origins. The focus is on the struggle, not on the outcome. Learning can show different perspectives of looking at the same thing.

The most significant change that the learning trajectory has led to, according to the experiences of the interviewees, is the change in mindset for the interviewees. A change in the typical mindset, practices and self-centered behaviors from partners is observed. One of the conclusions is that learning stimulates openness and that this has a positive impact om collaboration, which echoes the theory about collaboration from Hertogh and Westerveld (2010). This "insight" has been that a collaborative partnership and understanding of each other's roles and will lead to a "better" project.

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