Available online at www.sciencedirect.com
ScienceDirect
International Journal of Project Management xx (2016) xxx – xxx
International Journal of Project Management
www.elsevier.com/locate/ijproman

Knowledge transfers and project-based learning in large scale infrastructure development projects: an exploratory and comparative ex-post analysis

Geoffrey Aerts [a,*], Michaël Dooms [a], Elvira Haezendonck [a,b]

[a] Faculty of Economic and Social Sciences and Solvay Business School, Vrije Universiteit Brussel, Pleinlaan 2, 1050 Brussels, Belgium
[b] Faculty of Applied Economics, Universiteit Antwerpen, Prinsstraat 13, 2000 Antwerp, Belgium

Received 26 September 2015; received in revised form 31 August 2016; accepted 20 October 2016
Available online xxxx

Abstract

In order to apprehend how employees (managers and engineers) active in state-owned enterprises (SOE) learn from and share working experience in large-scale infrastructure development projects, this research analyses the project-based knowledge transfer and learning that occurred in two complex infrastructure (PPP) projects. Using face-to-face interviews with both internal and external project participants, an ex-post comparative analysis is made of two large-scale Belgian rail infrastructure projects. The results indicate that transferring the public sector project teams from one project to another allows for inter-project learning to take place. The knowledge transfers from the project setting to the state-owned enterprise are mainly the transfer of individual and tacit knowledge focussing more on (inter-) personal and individual learning, than on organisational learning. The latter is caused by the limited perceived strategic value of the researched projects, because of their public–private partnership (PPP) finance structure. As such, project-based organisational learning for these large-scale infrastructure (LSI) projects remains underdeveloped.

Keywords: Public sector management; Public–private partnership; Project management; Knowledge transfer; Knowledge management; Organisational learning

1. Introduction

Knowledge transfer (KT) and knowledge management (KM), as themes in academic literature and as organisational tools in practice have developed under the umbrella of process efficiency-enhancing measures that contribute to the effectiveness of operations on the one hand, and to innovation in terms of quality of competition on the other hand (Wiig, 1997; Gupta et al., 2000; North and Kumta, 2014; Armistead, 1999; Jafari, 2009; Nonaka and Takeuchi, 1995). The aim for KT and KM is the creation of knowledge assets out of information and expertise, and turning this knowledge into a competitive advantage. The main challenge for KT and KM lies in installing organisational learning dynamics that are suited to the culture of an organisation and are based on a combination of people (competencies) and information systems (technology) (North and Kumta, 2014; Argote, 2013; Gupta et al., 2000).

This knowledge-based challenge is also important in public sector organisations, since the introduction of New Public Management (NPM) and the adoption of private sector management methods in the public sector are also reflected in the adoption of knowledge management in state-owned enterprises (North and Kumta, 2014; Gill et al., 2010). Sceptics to this evolution and the implementation of NPM have argued that these sorts of tools cannot be imported from the private to the public sector, given that there is no market logic that would support their implementation (Flinders, 2010). Inversely, we can however

* Corresponding author.
E-mail addresses: Geoffrey.Aerts@vub.ac.be, geof.aerts@gmail.com (G. Aerts), Michael.Dooms@vub.ac.be (M. Dooms), Elvira.Haezendonck@vub.ac.be (E. Haezendonck).

http://dx.doi.org/10.1016/j.ijproman.2016.10.010
0263-7863/00

wonder why knowledge and knowledge assets would not be important in the public sector.

Nevertheless, as societies develop, infrastructure development projects naturally grow in scale and complexity, thereby increasing the number of professionals involved in projects, also lengthening the project life cycles and generating complex interfaces (Chou and Yang, 2012; Gasik, 2011). This in turn impacts the types and quantities of project-related information that are generated, making them more fragmented and more complex. Consequently, all contemporary infrastructure (development) projects require substantial amounts of specific knowledge, whether (Carillo et al., 2006) or not PPP constructs are used as a form of procurement. In Belgium, the initial design and execution phases of PPP projects are quite novel and several public contracting parties are under-experienced with PPP (Mazouz et al., 2008; Aerts et al., 2014). The future of PPP in Belgium, given the budgetary constraints and European requirements, is uncertain, yet the need for large-scale infrastructure development remains. Hence, considering PPPs as a separate type of projects with a specific structure may underestimate the potential value of project learning in these projects to LSI projects in general. The latter would clearly be a mistake given that PPPs are a subset or segment of the LSI project market, and given that the accumulation of LSI (PPP) knowledge contributes to the capacity of public sector organisations in terms of successfully initiating, implementing and completing the construction of increasingly complex types and structures of projects, irrespective of their financing nature (Carillo et al., 2006). The latter is confirmed by Winch and Leiringer (2016) who recently underlined and identified the importance of owner project capabilities to ensure project success. They build on research demonstrating that project capabilities are essential to obtain competitive advantage for a project-based firm providing infrastructure assets (Brady and Davies, 2004 and Davies and Brady, 2000). Winch and Leiringer (2016) argue that, complementary to the suppliers of assets, "strong owners" can also achieve higher performance on major infrastructure projects if they develop project coordination capabilities. Moreover, these 'owner capabilities' should be dynamic (Helfat et al., 2007; and Winter, 2003), and as such extend their resource-base, because these particular project-related resources are usually not the core business of the owners (Winch and Leiringer, 2016), i.e. the public sector entities. Building these capabilities can be done through internal learning or external acquiring via for example consultants, with the risk of losing long-term owner capability (Flowers, 2007) for the latter.

LSI projects in general and large scale PPP projects in particular involve large capital expenditures and are characterised by great operational complexity. This creates severe consequences when mistakes are made based on a lack of experience and or information (Marshall et al., 1997). Therefore, even though the literature on LSI (PPP) projects expresses a potential to raise efficiency, this is largely dependent on the ability of public and private sector actors to act and perform with sufficient knowledge and expertise.

However, project management literature on the development of project knowledge and capabilities is particularly focused on one side of the project market, namely the contractor or supplier side (Brady and Davies, 2004; and Davies and Brady, 2000). The focus in management literature, in this sense, has been on the value of knowledge management for private sector actors (Grant, 1996; Barney, 1996) that are involved in for example PPP projects (Kwawu et al., 2010), with less attention for the importance of KM and organisational learning in public sector entities (Carillo et al., 2006). When the issue has been addressed, it has mostly been done in a normative or prescriptive manner, rather than a pragmatic, realist, descriptive ex-post manner (Robinson et al., 2010).

In sum, it is relevant to study whether for large-scale infrastructure investments, knowledge is actually accumulated, disseminated, transferred and reused intra- and inter-organisation wise, in and between public sector organisations involved in these projects. The focus of the current research is therefore on the transfer of information or knowledge from and between the temporary project-environments back to a permanent public organisation, which in this case is a state-owned enterprise (SOE). More specifically, this paper provides an ex-post evaluation of two complex long-term infrastructure projects developed in light of the expansion and improvement of the Belgian railway system. The two cases, initiated by the same organisation, shed light on the extent and means employed to further organisational learning in a state-owned enterprise, through project-based knowledge management and transfer from one project to the next.

The paper is set up as follows; first the research design and the research methods are introduced. Afterwards the results of the study are discussed. In a final stage, a discussion of the implications towards future research is presented, whilst also offering a final conclusion.

2. Research perspective and framework

2.1. A state-owned enterprise perspective

Hodge et al. (2010) point out that the LSI—and in particular also the PPP—discourse and evaluation space is filled with many different interest groups, stakeholders and actors all with their own bounded perspectives (Hodge et al., 2010; De Schepper et al., 2014). Governments and/or involved public and semi-public entities hold a clear stake in these sorts of elaborate and complex projects, with potentially high political, societal and financial costs and societal backlash, when projects derail or do not live up to their expectations (Hodge et al., 2010). The latter is however highly likely, given that government failure in terms of policy delivery, strategy, project organisation and needs identification can lead to poor procurement incentives, lack of coordination, lack of skill, and lack of information (Yuan et al., 2009).

In a state-owned enterprise (SOE) that operates in a (semi-) competitive environment, it is expected that this lack of project coordination capacity is less prevalent, since such enterprises are assumed to have substantial say in the development of strategic (knowledge) assets. Hence this research approach opts

Please cite this article as: G. Aerts, et al., 2016. Knowledge transfers and project-based learning in large scale infrastructure development projects: an exploratory and comparative ex-post analysis. Int. J. Proj. Manag. http://dx.doi.org/10.1016/j.ijproman.2016.10.010