

Balancing control and flexibility in joint risk management: Lessons learned from two construction projects

Ekaterina Osipova ^{a,*}, Per Erik Eriksson ^b

^a Department of Civil, Environmental and Natural Resources Engineering, Luleå University of Technology, SE-97187, Luleå, Sweden

^b Department of Business Administration, Technology and Social Sciences, Luleå University of Technology, SE-97187, Luleå, Sweden

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Abstract

Joint risk management (JRM) is an approach that highlights the importance of collaboration between the project actors in managing risk that cannot be identified at the outset of the project. Despite the recognition of the concept in the literature, the use of JRM in practice seems to be rare. Based on contingency theory, we investigate how mechanistic (control-oriented) and organic (flexibility-oriented) management systems influence the implementation of JRM in two construction projects. In the first project, the actors managed to achieve a balance between control and flexibility, which paved the way for successful JRM. The extensive use of control in the second project hampered flexibility and constrained the use of JRM. We conclude that JRM requires both control for managing risk that has been identified and flexibility for dealing with unforeseen events. When a mechanistic approach is dominant, risk management remains a formal process carried out individually rather than collaboratively.

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1. Introduction

Risk management (RM) is an integral part of project management. A great deal of research about risk management has been focused on the development and assessment of models and tools for dealing with project risk (e.g. [Baccarini and Archer, 2001](#); [Baloj and Price, 2003](#); [Chapman and Ward, 2003](#); [Del Cano and De la Cruz, 2002](#)). Despite the variety of available tools and techniques, RM is often criticized for being inadequate (e.g. [Osipova and Eriksson, 2011a](#); [Tang et al., 2007](#)) and not achieving its main objective — to bring more certainty to a project by minimizing threats and maximizing opportunities. While some risks can be foreseen at the beginning of a project and allocated among the project actors, other risks are difficult to predict. For example, in their early stages, the majority of construction projects are very abstract and involve risks that are derived from uncertainty about project scope, organizational structure, the responsibilities

and liabilities of different actors etc. These risks are difficult to allocate between the parties at the project outset. Moreover, even risks that have been identified and allocated may change in scope and require different types of response. In order to manage such risks successfully, collaborative efforts among project actors are needed. Joint risk management (JRM) is about the dynamic management of risk ([Rahman and Kumaraswamy, 2005](#)). A dynamic approach implies that the identification and assessment of project risk, along with the response to it, are performed proactively and jointly throughout the project ([Hartman et al., 1997](#)). Despite the fact that JRM is arguably an effective tool, the use of JRM still seems to be rare ([Doloi, 2009](#); [Osipova and Eriksson, 2011b](#); [Rahman and Kumaraswamy, 2004](#)).

Opportunistic behavior is an inherent phenomenon in projects because participants have different objectives and strive to optimize the result for their own organizations rather than the project ([de Man and Roijakkers, 2009](#)). To handle opportunistic behavior, the majority of project management tools are control-oriented, emphasizing hierarchical structures, centralized decision-making and the division of work and responsibilities ([Lenfle and Loch, 2010](#)). The drawback with such a control focus

* Corresponding author. Tel.: +46 920491463.

E-mail addresses: ekaterina.osipova@ltu.se (E. Osipova), pererik.eriksson@ltu.se (P.E. Eriksson).

is that it hampers collaboration and adaptability. At the same time, project organizations have to be flexible to changes and challenges in order to be able to manage the uniqueness, uncertainty and complexity of projects (Geraldi, 2008). Thus, control and flexibility are both needed if a project is to be managed effectively. As control and flexibility are two contradictory approaches, the achievement of an optimal balance between them is one of the greatest challenges for a project organization (Raisch, 2008).

Burns and Stalker (1961) were pivotal pioneers of contingency theory. They investigated the circumstances under which control-oriented mechanistic organizations and flexibility-oriented organic organizations were most prosperous. Subsequent studies have followed in their footsteps and supported their theory, mostly at a company level. More recently, studies have also discussed the roles of control and flexibility in project management (e.g. Geraldi, 2008; Koppenjan et al., 2011; Lenfle and Loch, 2010; Sine et al., 2006). These authors agreed that modern project organizations have to manage the coexistence of mechanistic (controlling) and organic (flexible) approaches in a way that facilitates the achievement of project objectives. Risk management is a part of the overall project management process and, therefore, is affected by mechanistic and organic management systems.

However, there is still a lack of knowledge about how to manage the tension between control and flexibility in project organizations. There are no ready answers about how organizations achieve an optimal combination and studies that improve our understanding about weaknesses and strengths of different approaches are relevant. Furthermore, despite the fact that risk can significantly affect project objectives, the influence of control-oriented and flexibility-oriented approaches on the RM process has not been investigated. It should thus be worthwhile to examine how the extent of control and flexibility in projects influence JRM. We attempt to address this question by integrating risk management literature and organizational theory about mechanistic and organic management systems in a study of two construction projects.

The purpose of this paper is to investigate how mechanistic and organic management systems influence the implementation of JRM. We have formulated two research questions:

1. What is control and flexibility from a project-based organizational perspective?
2. How do control and flexibility affect the implementation of JRM?

The paper begins by presenting a theoretical framework that aims to identify the characteristics that distinguish between control-oriented and flexibility-oriented project organizations. In the next section, uncertainty and risk management literature is presented and the connections between control/flexibility and RM are discussed. Following the two theoretical sections, the empirical methods are described and two case studies serve as illustrative examples of how different extents of control and flexibility can affect the implementation of JRM. The paper ends with a concluding discussion about the practical and theoretical contributions of this research.

2. Theoretical framework

2.1. Mechanistic and organic approaches to project management

One of the fundamental pieces of research within organizational theory is the work by Burns and Stalker (1961), who studied 20 firms in which they observed, followed and interviewed personnel in order to describe how the firms were managed. As a result of their study, they proposed two contrasting management systems, mechanistic and organic. A mechanistic system, which is characterized by a high level of control, specialized differentiation, hierarchical structures and the importance of individual knowledge and skills, is considered to be appropriate in stable environments. When there is a high level of uncertainty, a more flexible approach is needed. The organic system, which is characterized by a network structure, spread of commitment and informative communication, is therefore more appropriate when there are changing conditions. The two approaches are contradictory and characterized by distinctly different management philosophies (see Table 1).

Based on the theory of Burns and Stalker, researchers have studied how mechanistic and organic approaches affect project management. In many studies, the main characteristic of mechanistic organizations is associated with the use of control, while organic organizations are associated with a high degree of flexibility. Aaker and Mascarenhas (1984) defined control as an approach that aims to mitigate all undesirable changes. Flexibility, in turn, is about adapting to uncertain and rapidly-occurring environmental changes that might affect the organization's performance. Koppenjan et al. (2011) defined two approaches to project management based on the level of control and flexibility in the project. A predict-and-control approach has a strong focus on planning and control, aiming at eliminating uncertainty and complexity. In contrast, a prepare-and-commit approach aims at a constant and shared management of uncertainty and complexity and is characterized by close cooperation between the project

Table 1
Characteristics of mechanistic and organic organizations (from Burns and Stalker, 1961).

Mechanistic	Organic
The specialized differentiation of functional tasks	The contributive nature of special knowledge and experience
The abstract nature of each individual task (distinct from the whole organization)	The "realistic" nature of the individual task (task is seen as set by the whole environment)
The precise definition of rights and obligations attached to each functional role	The shedding of responsibility (problems may not be defined as being someone else's responsibility)
Hierarchical and vertical structure of control, authority and communication	A network and lateral structure of control, authority and communication
Location of knowledge at the top of the hierarchy	Knowledge can be located anywhere in the network
Working behavior is governed by instruction and decisions made by superiors	Superior function of information and advise rather than instructions and decisions
Importance and prestige of individual knowledge	Importance and prestige of common knowledge

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