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International Journal of Project Management 33 (2015) 140 – 152

International Journal of Project Management

www.elsevier.com/locate/ijproman

Agile portfolio management: An empirical perspective on the practice in use

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Received 16 May 2013; received in revised form 23 February 2014; accepted 4 March 2014
Available online 24 April 2014

Abstract

Agile project management methods revolutionized the way how software projects are executed and organized. The question, however, on how to enable agility outside of individual projects and help larger organizations to compete with small entrepreneurial companies requires further attention. As a possible perspective, project portfolio management provides a global view on resources and their distribution across individual projects according to strategic choices. Based on 30 interviews conducted in 14 large European organizations this study contributes to the understanding of agile project management methods applied in IT project portfolios. First, we empirically identify the domains of practice. Then, guided by literature and our data we discuss the characteristics and implications of the agile portfolio management practice in our case organizations.

Keywords: Agile project management; Project portfolio management; Software project management; Organizational routines; Empirical study

1. Introduction

Agile project management methods caused a silent revolution in the way projects are organized and executed (Abrahamsson et al., 2009; Dybå and Dingsøyr, 2008). While originating in software projects, the methods are gaining increased attention in the general field of project management. In 2011, for example, the term *"agile project management"* for the first time surpassed *"agile software development"* on Google Trends. However, the current methods are bound to a "sweet spot" (Hoda et al., 2010) of small, co-located software projects and individual teams.

In order to break out of this comfort zone and implement the advantages of agile project management in broader organizational contexts, research calls for a view on agility outside of individual projects and teams (Kettunen and Laanti, 2008). One possible perspective, especially prominent in project-based organizations, is that of project portfolio management (PPM). PPM links organizational strategy to the distribution of resources across projects in the portfolio (Cooper et al., 1999; Martinsuo and Lehtonen, 2007). As such portfolios provide an opportunity to make organizations more agile outside of individual projects.

While portfolio management is well established in traditional project management literature, the iterative nature of agile methods introduces new challenges to the current management practice. Agile methods show substantially different patterns of action to traditional projects (Nerur and Balijepally, 2007; Thummadi et al., 2011). They are largely based on recurring activities, so-called organizational routines (Pentland and Feldman, 2007), such as iterative delivery of intermediate results or daily standup team coordination meetings (Schwaber and Beedle, 2001; Williams, 2012). Agile software development is fast and flexible due to frequent feedback loops, iterative reviews and close customer contact. Without this direct interaction agile methods loose much of their effectiveness (Hoda et al., 2010; Stettina and

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http://dx.doi.org/10.1016/j.ijproman.2014.03.008
0263-7863/00/

Heijstek, 2011). This is especially challenging for larger organizations with well established routines and structures.

Leffingwell (2007, 2010), Krebs (2008), and Vähäniitty et al. (2012) propose frameworks for agile portfolio management and point out initial benefits and challenges, however, there is a lack of empirical evaluation. While most contributions originate in consulting literature only a few limited single-case studies exist on program management (Kettunen and Laanti, 2008; Laanti, 2008; Laanti et al., 2011), and a few conference publications exist on the application of agile methods within project portfolios, all in individual organizations (Kalliney, 2009; Rautiainen et al., 2011). In order to close this research gap we take the perspective of the concrete practices applied across three stakeholder teams: senior management, portfolio management and project management. We interviewed project and portfolio management staff in 14 organizations in the Netherlands, Germany and Sweden on their experiences in using agile methods in the context of IT project portfolios. The 30 interviews resulted in a total of roughly 1600 min of recorded material.

In this paper we report on this study for the first time presenting an insight on the portfolio management practice in multiple organizations applying agile methods. To the academics this paper provides an overview of the portfolio practice domains affected by agile methods, thus enabling an appropriate investigation on the necessary micro-activities to establish agile portfolio management capabilities (Salvato, 2009). To the project management professionals it provides an understanding of the potential characteristics of agile portfolios and the implications to be expected when applying agile project management methods in portfolios of projects.

2. Related work

While project portfolio management originates in project management literature (Martinsuo and Lehtonen, 2007), agile project management practices as we know them today originate in the domain of software development (Dybå and Dingsøyr, 2008). Further, the roots of agility in organizations can be traced back across multiple domains including manufacturing and logistics (Booth and Harmer, 1994). Due to different interpretations across domains the concept can be difficult to define (Laanti et al., 2013). Widely, agile organizations are regarded as those that learn fast and are effective (Booth and Harmer, 1994; Conboy, 2009). Agility as a concept to execute and organize software development projects emerged in the 1990s based on ideas found in new product development (Takeuchi and Nonaka, 1986). Agile project management methods such as Scrum (Dybå and Dingsøyr, 2008; Schwaber and Beedle, 2001) are design-oriented and enable frequent feedback loops based upon recurring project cycles (e.g. demonstration of intermediate results). Compared to traditional plan-driven project management methods they embrace project environments as uncertain and enable an iterative delivery of intermediate project results rather than assuming their predictability and a linear sequence of steps from project definition to delivery (Nerur and Balijepally, 2007).

In project management literature the goals of project portfolio management are established as (Martinsuo and Lehtonen, 2007): (1) maximization of the portfolio's financial values, (2) linkage of the firm's strategy to the portfolio, (3) and balancing the project within the portfolio with respect to the organization's capacities. There is a number of contributions describing how such a process is implemented in traditional project management practice, most prominently the work of Cooper et al. (1999) and the guidelines provided by the Project Management Institute (PMI, 2008). Although literature generally distinguishes portfolio management from program management in the fact that the projects are content-wise independent, there is an overlap to program management literature. Ferns (1991) distinguishes three types of programs: strategic (group of projects to implement a strategic reorganization e.g. change of an organizations mission), business-cycle (group of projects linked to a time-related business cycle such as an annual plan, this configuration is generally understood as portfolio management) and single-objective (a macroproject, so large in size that it is divided and managed as a group of smaller sub-projects).

While the standard PPM models mentioned above have their specialities the main concept remains the same, they describe mostly linear process steps to *identify*, *prioritize*, *allocate*, *balance* and *review* the projects within a portfolio. In that sense the iterative nature of agile methods with frequent reevaluation of project results might affect current portfolio management practice. Lycett et al. (2004) point at the contextuality of multi-project environments. They outline the fact that current frameworks assume an equally effective application of prescriptive and highly structured approaches in all contexts. Recent contributions argue that the complex societal setting of project work is not sufficiently reflected in the available frameworks, neglecting their embedment in context and the relevance of actors and their interactions constantly (re)shaping the project environment (Cicmil et al., 2006). To improve this understanding the literature proposes to conduct concrete empirical analyses of project management methods enacted in practice (Cicmil et al., 2006; Pentland and Feldman, 2007; Wenger, 1998).

Agile practices, are an integral part of agile methods such as Scrum. In Scrum many project management tasks are taken over by project teams. The practices are concrete team routines to a large extent based upon recurring micro-activities such as daily team coordination meetings, biweekly planning and review meetings with stakeholders, or post-mortem reviews (Williams, 2012). As such they make the software project management more explicit by describing team level routines and shedding light on parts of the process not considered earlier. However, these recurring activities make agile methodologies substantially different to traditional methods (see event sequencing study of Thummadi et al. (2011)). It is especially troublesome for large organizations which have to deal with co-existing sequential project management approaches and legacy systems. Here, the perspective of organizational routines (Pentland and Feldman, 2007) can be helpful in uncovering the underlying activities and their implications on existing practice.

Framework descriptions of agile methods applied in portfolio management are provided by Leffingwell (2007, 2010), Krebs (2008), and Vähäniitty et al. (2012). Leffingwell (2007, 2010) describes in his books and his framework description of the