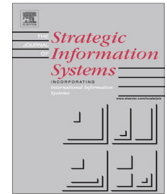




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## A dynamic capabilities perspective of IS project portfolio management

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## ABSTRACT

Organizations use information systems project portfolio management (IS PPM) to reconfigure their IS resources and capabilities to match changing market and economic conditions. IS PPM can therefore be characterised as a dynamic capability. We investigate how firms developed and adapted IS PPM to match the turbulent recessionary conditions witnessed after 2008–2009. This study contributes to an understanding of IS PPM by identifying the constituent dynamic capabilities and providing empirical examples of adaptation. To our knowledge, the study is the first to apply the notion of second order dynamic capabilities to the IS domain and also makes an important contribution to the more general concept of dynamic capabilities by providing empirical evidence and theoretical justification of the increased detailed, centrally controlled and analytical nature of IS PPM dynamic capabilities in recessionary conditions.

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### Introduction

Strategic information systems (IS) literature stresses how increased dynamism in the environment necessitates that firms are agile and can reconfigure their capabilities and resources rapidly (Merali et al., 2012; Tanriverdi et al., 2010). Projects are often the main vehicle for delivering new IS-based business capabilities and for achieving resource reconfiguration in firms. Thus, the reconfiguration required to match and even create market and environmental change relies on identifying, prioritizing and executing appropriate projects (Jeffery and Leliveld, 2004; Ward and Peppard, 2002). This selection, evaluation and implementation of information systems projects is called 'IS project portfolio management' (IS PPM) and is considered a key component of IS strategies in dynamic environments (Earl, 1993; McFarlan, 1981; McFarlan et al., 1983).

We adopt a socio-technical view of IS PPM, where the human aspects are both as important as, and entangled with, technical aspects (Orlikowski and Scott, 2008). IS PPM may include only projects that are considered as IS projects by the organization, or they may also include other projects that have a significant IS component (e.g. change projects, new product or service projects). As we discuss in the Research Methods section of this paper the firms studied demonstrated both approaches to IS PPM. Whilst some IS researchers and practitioners may wish to focus only the management of IS projects, this does not reflect the reality of IS PPM in many organizations and also impoverishes the role and contribution of IS professionals to other types of projects within their organizations.

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The concept of dynamic capabilities provides a means of understanding how firms change their underlying resources and capabilities (Eisenhardt and Martin, 2000; Helfat and Peteraf, 2009; Teece et al., 1997). Since IS PPM is directed at achieving changes to resources and capabilities, we suggest dynamic capabilities offer an appropriate lens through which to explore IS PPM. Other scholars have characterised PPM<sup>2</sup> in the new product development domain as a dynamic capability (Killen, 2008; Killen and Hunt, 2010). However, their characterisation of PPM as a single, monolithic dynamic capability provides limited insight and understanding. We therefore identify the constituent dynamic capabilities that contribute to IS PPM. More detailed component dynamic capabilities enable practising managers to determine the detailed activities, costs and timescales incurred in their development and maintenance. A more detailed consideration also enables exploration of the differential distribution of the component capabilities across firms and helps managers understand how to develop IS PPM as a means of gaining competitive advantage.

Identification of the component capabilities also aids researchers in studying how firms adapt IS PPM in turbulent market conditions. To date, research on the nature of dynamic capabilities has examined markets that are turbulent from rapid expansion (e.g., Drnevich and Kriauciunas, 2011; Koch, 2010). However, little is known about how dynamic capabilities change as a result of turbulence and uncertainty caused by recessionary conditions. As the global financial crisis of 2008–2009 and the subsequent prolonged global recession have demonstrated, firms need to adapt their IS PPM and other dynamic capabilities to meet, not just expansionary, but also recessionary conditions.

Our study addresses the following two research questions: (1) *what are the constituent dynamic capabilities that contribute to IS PPM and how do firms develop these?* (2) *how do firms adapt the dynamic capabilities constituting IS PPM to match turbulent recessionary conditions?*

We begin with a review of prior literature on IS PPM, including its role in IS strategic planning. We then provide an overview of the dynamic capabilities literature, again emphasising studies undertaken in the IS and PPM domains. We next describe the case study method adopted for the study and present the findings using data drawn from the case studies. We conclude with a discussion of the findings and suggestions for further research.

## Literature review

### IS PPM

Several definitions of PPM exist, and though they are generally consistent, each emphasises a different aspect. For example, the [US Project Management Institute \(2008, p.8\)](#) emphasises the coordination across projects to meet strategic objectives: 'a portfolio refers to a collection of projects or programs and other work that are grouped together to facilitate effective management of that work to meet strategic business objectives.' The [UK Office of Government Commerce \(2007, p. 3\)](#) adopts a process perspective, stating that '[PPM] is a corporate, strategic level process for co-ordinating successful delivery across a firm's entire set of programmes and projects.' The [National Audit Office \(2006, p. 8\)](#) definition identifies the component activities of prioritisation, alignment and ability to deliver: 'Prioritisation of all a firm's projects and programmes in line with business objectives and matched to its capacity to deliver them.' We combine elements from all three definitions such as processes and component activities to produce the following definition: PPM are the processes and routines that allow co-ordination across an organization's programmes and projects to meet strategic business objectives and includes processes and routines relating to prioritisation, effective project management and resource allocation. In the above definition we do not follow the [UK Office of Government Commerce's \(2007\)](#) suggestion that PPM includes a firm's entire set of programmes and projects. This allows us to recognise that a firm may have more than one project portfolio and allows us to define IS PPM as: the processes and routines that allow co-ordination across an organization's IS programmes and projects to meet strategic business objectives. As stated in the introduction, programmes and projects in IS PPM may include only projects that are viewed as IS projects by the organization, or it may also include other projects that have a significant IS component (e.g. change projects, new product or service projects) Both technical and social issues of the projects and programmes will be included in IS PPM. Our definitions support the premise of our study, that IS PPM is a collection of activities that encompass both routines and processes and therefore can be viewed as a set of dynamic capabilities.

PPM approaches have aspects in common with financial portfolio management, such as balancing risk and reward ([Maizlish and Handler, 2005](#); [Weill and Aral, 2006](#)). [Bardhan et al. \(2004\)](#) describe how a variant of real options, used in managing financial portfolios, can help prioritise IS projects on the basis of the firm's overall strategy and the risks it is willing to take in the prevailing economic and market conditions. However, several differences make PPM particularly challenging ([Engwall and Jerbrandt, 2003](#); [Kumar et al., 2008](#)), including a lack of clear financial valuations of the underlying projects ([Ashurst et al., 2008](#)), greater constraints on certain resources (e.g., the availability of experienced project managers; [Cooper et al., 1999](#)), and the difficulty and costs of stopping ongoing projects for reasons that include 'escalation of commitment' ([Keil, 1995](#)). In the IS context, complexity increases because of the wide variety of project types ([Weill and Aral, 2006](#)), the difficulty of identifying and valuing many of the benefits ([Ward et al., 2008](#)), and the inability to accurately attribute both costs and benefits to specific investments ([Jeffery and Leliveld, 2004](#)).

<sup>2</sup> In this paper the term PPM is used to signify project portfolio management in non-IS contexts.

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