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Revisiting IS Project Management Strategies: The New Challenges

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ABSTRACT

Many organizations have made substantial investments in information systems (IS) delivery projects that have failed to satisfy the objectives for which they were commissioned; several projects have been abandoned before completion. There has always been a high correlation between IS project management effectiveness and successful systems delivery. Hence, the IS community has been consumed with how to reverse project failure factors and trends. However, the steady increase in IS project risk factors attributable to global and other project considerations have raised the stakes. This article explores this interesting subject and recommends an approach that integrates the objectives of the project management office with knowledge management principles to alleviate IS project coordination problems.

INTRODUCTION

Organizations have only two means at their disposal to carry out their business mission: The business processes (or work systems) they engage to structure the repetitive elements of their activities and the projects they commission from time to time to satisfy some specific purpose (Martin & Tate, 1998). Organizations therefore establish fairly permanent structures to manage business process operations. They prescribe business rules, practices, and policies to guide the operations of these repetitive activities and establish built-in controls and balances to ensure desired results while making provisions for adjustments and exceptions.

A project, however, is a temporary arrangement. It is commissioned as a one-time effort to produce a specific delivery within a determined schedule. It is closed down after it has accomplished its purpose or is abandoned if it fails (Lee et al., 2003). Project participants are assigned to tasks based on aptitude and availability and reassigned to other activities when the project terminates. The opportunity for experiential learning on a single project is limited and recovery from project missteps is more difficult than correcting errors in regular business process operations. However, organizations assess project performance, *a posteriori*, to learn from both successes and failures.

The information systems (IS) community initially borrowed project management principles and practices from the much older engineering field. Eventually, however, key differences in the nature and context of IS projects led to appropriate variations in the evolution of IS project practices (Jurison, 1999). Frequently mentioned differences are the conceptual (rather than physical and tangible) nature of the deliverables and the volatility of the IS project environment; Brooks (1987) acknowledged these as contributors to the essential complexity and failure rate of IS projects.

Figure 1 denotes that both process and project management principles are applied in IS projects. The capability maturity (CMM) model recognizes the importance of both in the assessment of an organization's systems delivery capability (Kirsch, 2000). This is because IS delivery—which is the term used throughout this article (instead of IS development) for the process of planning, sourcing by any available means, deploying, and maintaining IS—involves similar and repetitive activities that apply to all projects as well as distinctive contextual characteristics that are peculiar to each project. Process management is addressed through a systems development methodology (SDM), which provides the blueprint for advancing through each IS project lifecycle (Roberts et al., 1999). Attaining the highest levels of CMM designation is predicated on an organization's success at capturing metrics about the effectiveness of its SDM (Level 4) and then using these metrics to optimize the IS delivery process (Level 5).

Scholars have questioned whether conventional IS project management techniques are adequate to satisfy the increased coordination requirements of contemporary and future IS projects (Andres & Zmud, 2002; Marbach & Shaw, 2002). Conventional project management theories addressed monolithic, single-organization projects with a single project manager and co-located project participants (Lee et al., 2003). However, as a result of the confluence of several circumstances the challenges of IS project coordination have increased significantly (Andres & Zmud). Waves of new technology have enabled a variety of organizational innovations such as e-commerce, virtual corporations, and new global organizational strategies. There are now more sophisticated enterprise-wide systems and several application architecture choices. New systems delivery methods such as rapid application development (RAD) and extreme programming (XP) are maturing and some organizations use multiple methods and a combination of approaches to source new IS.

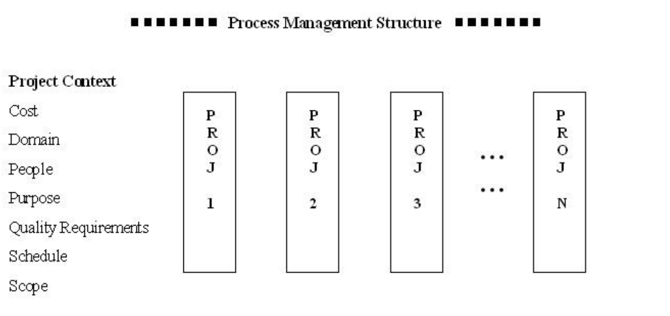
The objective of this conceptual paper is to contribute to the theory and practice of project management by examining the factors that have encumbered conventional approaches and the complexities that have extended the difficulties in order to recommend a possible solution that involves extending the objectives and capabilities of the concept of the project management office (PMO) to alleviate some IS project risks.. The paper also seeks to motivate research questions that could provide insights on how to increase the success rate of IS projects.

CONVENTIONAL PROJECT MANAGEMENT WISDOM

The goal of IS project management is to coordinate approved human, financial, and technical resources to realize the project objectives within the desired timeframe (Ward, 1994). In order to accomplish this goal, conventional IS practices establish project governance through a steering committee comprising user-managers whose departments are affected by the project and the project manager. It is usually chaired by the most senior manager of the unit that has the greatest stake in the project. The stages of a typical IS project are summarized below and highlighted in Figure 2.

- The major deliverable from the conceptual phase is a comprehensible project charter outlining the terms of reference including objectives, scope, key milestones, and management and communication structures. The charter serves as the approval instrument for the project sponsor and to register the commitment of all the participants and their acceptance of their responsibility (Luber, 1991; Mousinho, 1990; Rettig & Simon, 1993).
- Detailed planning is typically accommodated by a work breakdown structure to partition the project into detailed activities, tasks, and subtasks and facilitate estimation, resource allocation, scheduling,

Figure 1. Process and Project Management



task allocation, budgeting, and establishing delivery quality metrics (Corbin, 1991).

- Execution involves managing the project resources to accomplish its goals and deliver the requisite quality by monitoring work flows, scope, schedule, budget, quality, and deviations from the agreed project plan and reviewing progress and outcomes, identifying variances, and prescribing alternate courses of action and adjustments (Fried, 1992; McComb & Smith, 1991).
- At project termination, team members' performances are reviewed and skills are reassessed to determine redeployment decisions and to promote organizational learning (Jurison, 1999) in order to reinforce positive experiences and avoid harmful effects in future projects.

Figure 2. Conventional IS Project Methodology Model

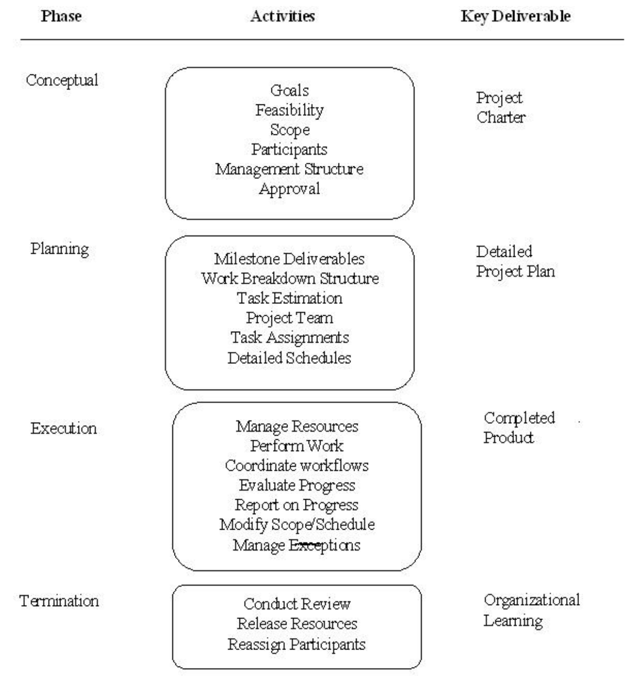


Figure 2. Conventional IS Project Methodology Model

INCREASING IS PROJECT MANAGEMENT CHALLENGES

Effective IS project management is considered a critical success factor in IS delivery (Espinosa et al., 2002). However, IS projects have been characterized by inordinately high failure rates (Gibbs 1994; Schaider, 1999); several IS projects end up as severe failures or runaway projects according to Mousinho, (1990), and many are abandoned before completion. Statistics published by the Standish Group International Inc. indicate that only 26% of IS projects evaluated between 1994 and 1998 were successful, 28% were abandoned and 46% experienced some problems. Even successfully deployed systems frequently exhibit symptoms of ineffective project execution that are reflected in the high cost of resources devoted to software maintenance (Banker et al., 1998;McComb & Smith, 1991; Pressman, 2000).

Despite seemingly faithful applications of process and project management practices and the confirmation that a SDM generally improves project results (Chatzoglou, 1997), project management interventions seem grossly inadequate to address many of the perennial problems encountered; yet IS projects have become even more complex (Al-Mushayt et al., 2001) presumably because of the convergence of several additional risk factors (Chen et al., 2003). These factors include (1) direct technology impacts that often cause organizations to establish increasingly loftier systems goals, the variety of systems delivery methods, and several alternative strategies for sourcing IS (2) IT-enabled innovations that have provided several new ways for organizations to structure their business operations.

Increased Project Risks Due to Direct Technology Impacts

The earliest computer-based information systems (called data processing systems) targeted increased efficiencies in Accounting and Finance (Somogyi and Galliers, 2003). Soon the demand for other functional systems grew and produced what Tsichritzis (1997) called the second wave of computing. In the 1980's the focus shifted from functional systems that supported the "stovepipe" arrangement of the hierarchical organizational structure to integrated systems that exploited the cross-functional dependencies of organizational processes. This thrust began in the manufacturing area with materials requirements planning (MRP) and manufacturing resources planning (MRPII) systems and eventually gave rise to enterprise resource planning (ERP) systems. These more complex applications have also led to an increasing demand for systems integrators to coordinate disparate systems components. Typically several software project suppliers, IT providers, systems integrators, and multi-organization project teams are involved with ERP projects. Simultaneously, advanced technology permitted distributed application architectures and enabled data distribution strategies that allow organizations to ignore the relatively simpler centralized computing environments; while these innovations provide greater flexibility, they increase IS project risk (Kirsch, 2000).

The sequential waterfall lifecycle paradigm has been the traditional reference model for IS delivery processes. However, several other incremental and/or iterative methods (Duggan, 2004) such as RAD, the spiral model (Boehm, 1988), and cleanroom software engineering (Trammell et al., 1996) have become prevalent. The use of object and component-based development approaches has also increased (Szyperski, 1998) and agile development methods such as XP (Goebel, 2003), dynamic systems development methodology (DSDM), (Barrow and Mayhew, 2000; Beynon-Davies et al., 2000) and others have grown in popularity. Many researchers (Lee & Xia, 2002; Meso & Medo, 2000; Vessey & Glass, 1998) are also calling for a method-mix (the integration of hitherto competing methods) in IS delivery projects to increase the odds of producing higher quality systems.

There are now several IS sourcing alternatives available to organizations. Previously, the majority of IS were developed in-house (in-sourced); now, there is a major shift from custom-built toward commercial off the shelf (COTS) software. This trend, which is expected to continue indefinitely (Sawyer, 2001), caused worldwide software sales to almost triple between 1986 and 1995 (Carmel, 1997). Organizations have also outsourced portions or all of their application development either to local or overseas (offshore) contractors, following the experience of outsourcing benefits in other IT areas.

Project Risks Due to IT-Enablement of Organizational Changes

Increasingly, global IS projects are commissioned to coordinate the business processes of organizations linked across national borders. Many organizations have exploited IT innovations that have enabled entirely new ways to structure their operations; these include e-commerce and virtual corporations (logically rather than physically connected business entities). Some have adopted global business models to extend their global reach and competitive scope (Boudreau et al., 1998). Successful political maneuvers have also established regional trading blocs and, with them, collaborative business ventures. These all create the need for global, multi-organizational IS projects, which necessitate virtual teams (Sarker & Sahay, 2003) who, perhaps, never interact in face-to-face interchanges.

The difficulty of managing IS projects increases when the project extends beyond national borders (Shore and Venkatachalam, 1995); coordination complexities are multiplied (Aoyama, 1998; Brown and Magil, 1994). Complications experienced in homogeneous (single-nation/single-organization) IS project environments are usually magnified several times in global projects **(**Roche, 1992). However, while modern communication technologies provide connectivity tools to help tackle geographical and temporal separation of dispersed project participants (Boudreau et., 1998), project managers have no similar facility to contend with coordination threats that result from cultural, social, and language differences, incompatible skill sets, inconsistencies in technical architectures and telecommunication regulations, technology availability across participating nations, and a variety of political systems and legal environments.

RECOMMENDATIONS

Years of careful application of defensible project management practices and SDMs to structure IS delivery projects, were not enough to prevent a plethora of failed IS projects in less risky project environments than the ones we are presented with today. It is timely to reexamine project management theories and practices in light of the additional risk factors that have further increased the difficulty of IS project execution and coordination.

Project managers still need the guidance of useful practices they understand and are comfortable with, but also require additional assistance to address the uncertainty and exposure involved in:

- Coordinating riskier projects using a variety of systems delivery and sourcing methods.
- Managing several sub-projects in technologically and organizationally volatile business environments with geographically dispersed activity managers.
- Accommodating project team heterogeneity, including language differences and cultural diversity.
- Managing multiple risk factors associated with the project environment, technology choices, and complex interrelationships and interfaces.

It is extremely doubtful whether the long accepted techniques can now rise to these new challenges and both reduce the deficiencies that conventional project experienced and also provide the increased coordinating mechanisms that current and future projects require.

In recent times, interest in PMOs have soared (Harry & McDonald, 1999). They seem to hold promise for providing some, though limited, solutions. In addition to the obvious need for improved coordination mechanisms (Chen et al., 2003), contemporary projects require a degree of project management flexibility (Lee & Xia, 2002) to address the several factors outlined with contingency responsiveness that is unlikely to be resident in individual project managers, who must contend with bounded rationality, the constraint on human decision-making resulting from imperfect information and other uncertainties.

The PMO has been presented as a super-ordinate project management body capable of providing assistance for large and complex projects and guidance for simultaneous, multi-project execution; a focal-point for streamlining all project efforts and instilling project management discipline (Marbach & Shaw, 2002). It is projected as an organizational entity that serves as the centerpiece of project management oversight and for promoting excellence in the application of professional project management practices (Hill, 2004). As currently implemented, PMOs may well increase the rate of successful IS projects and contribute to project management effectiveness by increasing the pool of competent project managers, promoting adherence to standards, and formalizing the evaluation of performance metrics (Rad, 2001). However, they are unlikely to provide the desired solutions to more complex coordination problems.

Harry and McDonald (1999) described the concept and implementation of a global project office, a multi-project, multi-user environment involving global projects with tools to support a variety of project roles; a centralized capability to combat islands of project information. This Global PMO provides a repository of project experiences and contributes to organizational synergy. Crawford and Cooke-Davis (2000) recommended cross-industry communities of project management practice to extend the organizational learning objectives of knowledge management across organizational boundaries in an integration of the leading practices of PMOs, knowledge management, and communities of practice. Part of the solution to the enormous problems of IS project coordination may well involve the integration of these concepts

CONCLUSIONS

IS Project managers in relatively homogenous project domains have experienced serious difficulties in delivering successful projects. These problems have increased significantly as a result of contemporary risk factors and other sources of uncertainty that project groups must now navigate. Such a prospect demands the reevaluation of the IS project and process practices we employ. While PMOs are becoming quite popular, current implementations are more responsive to the management of resources required to direct multi-projects simultaneously. What is called for, however, is more attention to knowledge management principles to capture, disseminate, and provide access to an updatable repository of project management best practices that could produce the appearance of a virtual pool of knowledgeable managers and support mechanisms that can be disseminated on demand. Substantial additional research is required to study particular risk-bearing impacts of contemporary project environments to cumulatively contribute to an advanced PMO capability model.

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