3-1-2010

A Case for Using The Balanced Scorecard Framework at Project Stage-Gates

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ABSTRACT

IT project management is plagued by its inability to stop projects that ultimately fail. This persistent problem results in the loss of scarce resources and IT departments unable to generate full value for money invested. There is considerable evidence to suggest that information asymmetry is a significant contributor to this waste. The Balanced Scorecard is a framework that has been widely employed in business as a tool to translate the organizational vision into workable business plans and a framework for effective communication amongst stakeholders. Stage-gates are a widely-used method in new product development and they are gradually making inroads into software project governance. Using a model based on Balanced Scorecard and Stage-gates, this study proposes how their use in IT project governance can mitigate the effects of information asymmetry and thereby increase the likelihood of terminating an uneconomical project quickly.

Keywords

Balanced Scorecard, information asymmetry, IT project governance, Stage-gates

INTRODUCTION

The Standish Group's Chaos Report 2006 indicated that 65 percent of Information Technology projects reach challenged or failed status each year (Rubinstein, 2007). In October 2005, one of Britain's largest food retailers wrote off a $526 million supply-chain system and hired 3,000 additional store clerks to manually stock the shelves (Charette, 2005). In April 2005, the FBI gave up on its Virtual Case File (VCF) project after investing $170 million, leaving it with the same pre-9/11 case management system as before, and that system was five years more antiquated than when the VCF project began (Goldstein, 2005).

This paper will focus on the problem of unwarranted project continuation; continued support for a project that will fail to generate full value for the money invested. If managers always acted as completely rational economic actors, they would discontinue support for a project as soon as they perceived that it would end up with a negative economic return. This paper will not focus on the closely-related problem of IT project escalation in which "there is continued commitment and negative information" (Keil, 1995). In IT project escalation, the project does not stay on schedule and budget with the specified level of quality. Sometimes an escalated project can result in a good economic return, but with unwarranted project continuation this is never the case. Unwarranted project continuation would include a project that stayed within schedule and budget parameters while providing the product or service requested, but ultimately yielded a negative economic return to the firm.

Previous research has identified information asymmetry, one of the key problems identified within agency theory, as a significant contributor to the problem of project escalation (Keil, Mann and Rai, 2000). In information asymmetry, the agent has information not available to the principal. The standard measures taken by the principal to reduce information asymmetry involve closely monitoring the agent via regular reports and project status meetings (Müller and Turner, 2005). While these measures can be helpful, judging from the high levels of unwarranted project continuation, they are insufficient. What is needed is a mechanism with an emphasis on identifying projects that will fail to deliver a positive economic return so they can be discontinued as early as possible thereby avoiding wasted resources. This paper proposes an addition to standard project governance practices that is expected to reduce information asymmetry and thereby reduce the incidence of unwarranted project continuation.

BACKGROUND

The traditional approach to rational decision-making derived from economic theory assumes a firm's managers will reach decisions intended to maximize the profitability of their firms. Managers should invest resources in the projects expected to provide the greatest profits to the firm and then periodically evaluate the actual economic performance of those projects. They should continue the projects expected to be profitable and, to avoid losses, discontinue those expected to be unprofitable. However, in reality it is common to observe continued managerial support for projects that ultimately become unprofitable; an estimated 30% to 40% of all IS projects fail to meet their schedule, budget, and quality requirements, standard indicators of a project that will ultimately fail (Keil et al., 2000).

This research is grounded in agency theory with a specific focus on the problem of information asymmetry (Keil, et al, 2000, Austin, 2001). An agency relationship is a contract under which one party (the principal) engages another party (the agent) to perform some service on their behalf which involves delegating some decision-making authority to the agent (Jensen and Meckling, 1976). In the project governance context, the agent is the project manager charged with meeting the project goals set by the principal i.e., the executive sponsor of the project. In a larger sense, the principal could also be the firm with which the executive is identified. For the purposes of this research, the project sponsor will be called the executive; they have the resources at their disposal, as well as the decision-making authority to continue or discontinue a project.

In a principal-agent relationship, when the agent has private information and an incentive to shirk their responsibilities, they are likely to act in their own self-interest at the expense of the principal. A failing IT project is particularly prone to information asymmetry. In this situation, private information would take the form of the project manager (agent) having knowledge indicating the project is likely to fail to deliver a positive economic return to the principal (the firm). The project manager (PM) would have a personal interest in maintaining their reputation as a successful PM and not finishing a project would be almost certain to damage their reputation. Even though a project would yield a negative economic outcome for the principal, the PM's career considerations are a strong incentive to shirk their responsibility to admit that the project should be discontinued. Given a PM with information asymmetry and an incentive to shirk their responsibilities to the principal, that PM would be likely to seek to continue the failing project at the expense of the firm. In a laboratory experiment, it was demonstrated that subjects were more likely to continue with a questionable project when they were manipulated to believe that they possessed private information about the project's prospects for success and that a decision to discontinue a project would damage their reputation and potentially harm their career (Harrison and Harrell, 1993). Prior research has determined that information asymmetry is a significant contributor to projects that are allowed to continue beyond the point at which they should have been terminated (Keil et al., 2000).

If a principal can closely monitor an agent's actions, a condition of information *symmetry* between the parties prevails. In this situation, a PM with an incentive to shirk would be less likely to do so because the principal would know the agent was shirking. In such an environment, it is in the best interests of the agent to discontinue a failing project because the principal will also know the project is failing.

Balanced Scorecard

One commonly-used mechanism for collecting and disseminating information is the Balanced Scorecard (BSC) framework (Kaplan and Norton, 1992). Managers using the BSC framework take into account multiple perspectives when decisions are made. The framework provides a system of checks and balances so that the major stakeholders in the firm and the four BSC perspectives (Financial, Customer, Process, and Learning & growth) are represented in decision-making. The adoption of BSC means every manager and executive of a firm routinely participates in multiple perspective decision-making (Kaplan and Norton, 1996). The emphasis on multiple perspectives and their communication among subject matter experts in each perspective would be expected to reduce information asymmetry as behaviors undertaken by agents within the firm to conceal private information are likely to be less successful than in a firm not utilizing BSC.

When a firm completely implements the Balanced Scorecard framework, every aspect of the firm is managed within it, including the Project Management governance of the firm. The Balanced Scorecard provides tools to facilitate multi-criteria decision-making by the key stakeholders of the firm. All activities of the firm are managed according to a balancing of the four major perspectives with this framework driving the information collection and dissemination practices throughout the firm. Every manager is judged and rewarded according to their functional area's performance relative to its' portion of the overall firm's Balanced Scorecard. In previous research, project management within a Balanced Scorecard framework has been shown to deliver better project performance results (Norrie and Walker, 2004).

Stage-Gates

Borrowed from the marketing realm, a popular mechanism for decision-making is Stage-Gates™, a process in which a new product must be vetted multiple times during the development process, from origin to completion. Stage-gates originated in response to an 82 percent failure rate for new product efforts (Cooper and Kleinschmidt, 1993). The benefits of Stage-gates have led to their incorporation into Project Management Frameworks such as PRINCE 2. Stage-gate decision meetings are held before the start of each project stage and a go/kill decision is made to determine if the project should continue. This normally will involve a few, relevant project stakeholders participating in the decision-making process. Numerous organizations have adopted Stage-gates for IT project governance and yet unwarranted project continuation has not been fully mitigated with resulting wastage of resources and falling behind the competition(Cooper, 2008). In a Stage-gate governance environment, if a project manager is withholding information about the project's likely negative outcome, they will have to withhold that information at every Stage-gate until the project is completed. Given the career impact for a manager that is eventually found out, this process is likely to reduce the incidence of information asymmetry.

CONCEPTUAL MODEL

Balanced Scorecard is a framework that has been widely employed in business as a tool to translate the organizational vision into workable business plans and a framework for effective communication amongst stakeholders. By providing multiple sources and perspectives on project performance to the executive sponsor (principal), the BSC framework can reduce information asymmetry by taking away the agent's control over private information. In the application of the BSC to projects, a project can conceptually and simply be seen as a mini-company (Martinsons, Davison and Tse, 1999; Stewart and Carpenter-Hubin, 2001) and that company's goals must be kept in line with the overall corporate business strategy and the key stakeholder requirements.

The application of the Balanced Scorecard to IT project governance will involve:

1. Setting the project vision in line with the business goals of the organization.
2. Translating the project vision into measurable goals. The scorecard forces the stakeholders of the project such as the executive, the project manager, senior customer representative, the program management office (PMO) representative or portfolio manager and corporate finance to arrive at an agreement on the metrics they will use to operationalize their project vision. By cascading the overarching project goals into objectives and measures for each group, the project's Balanced Scorecard provides a mechanism for alignment of all the project stakeholders and lays the foundation for effective communication among the stakeholders.
3. Feedback and Learning: This BSC perspective will ensure that previous projects contribute know-how to the current projects and that the firm's store of knowledge is enhanced through lessons learned in current projects to aid the firm in future projects. By supplying a formal mechanism for fact-based feedback and review, the Balanced Scorecard helps an organization foster learning and growth.

The proposed Balanced Scorecard metrics (Table 1) capture how well the project is being executed, and whether it is on course and on target. Poor performance on these metrics need not be a kill indicator, but a strong signal that the project and team could be in trouble, and that course corrections are needed.

Perspective	Finance	Customer	Process	Learning and Growth
Role:	Financial Executive	Senior Customer Representative	PMO Representative	Program Manager
Key Questions:	Project within budget? Expected value of project?	Project meeting customer requirements?	Key process parameters under control?	Project competencies and skills available? Project adding to corporate competencies?
Key Consider-ations:	- Estimated vs. actual cost - Expected costs vs. benefits	- Schedule - Functionality - Usability - Quality - Performance	- Productivity - Defect trends - Schedule variance - Effort variance - Process conformance	- Lessons learned - Training

Table 1: The Balanced Scorecard metrics of an IT project

Stage-gates in the Model

For an effective stage-gate system to work, prior research suggests the following guidelines (Cooper, 2008):

1. Governance roles must be carefully identified. The gatekeepers should be senior people in the business who own the resources required for the project leader and team to move forward. They are also people who can make the project go/kill decisions. The gatekeepers must be a small team, typically consisting of the business executive, the project manager, the senior customer representative, the PMO representative or portfolio manager, and corporate finance.
2. The gates must be associated with real project consequences. They should be used to reach a go/kill decision and used for resourcing if the project is continuing to the next stage.
3. Rules of engagement must be put in place. This ensures that all stakeholders/participants understand how they are to communicate and participate in the go/kill decision.
4. Gates must be lean and simple. The gates should not impose a high informational requirement from the project team members. To avoid information asymmetry, the information sources for the four perspectives should come from the team members roles associated with those perspectives (Table 1).

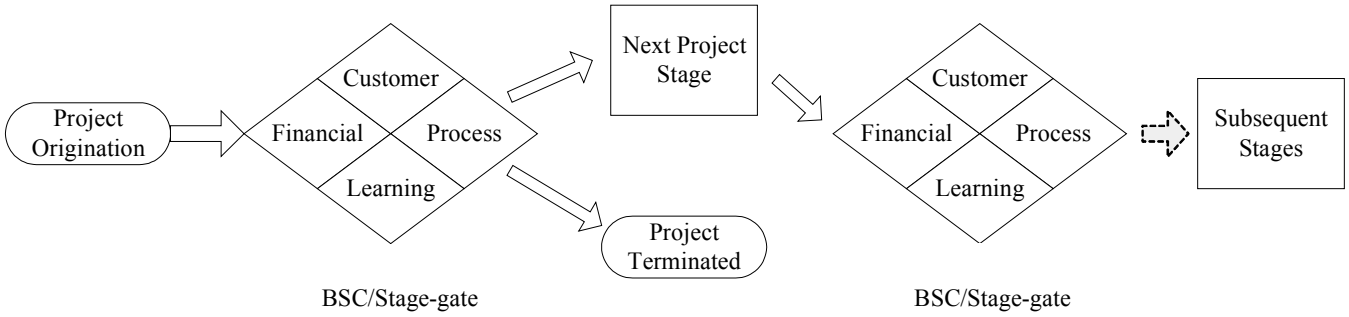

Figure 1: Use of the Balanced Scorecard at Stage-gates

There are numerous benefits of using Stages-gates in product management. Most best-practice product companies have implemented a robust idea-to-launch system, such as Stage-Gate®1 (Griffin, 1997; Cooper, Edgett and Kleinschmidt, 2002, 2005). The benefits of such a process have been well documented and many well-known companies, such as Proctor & Gamble, Emerson Electric, ITT, and 3M, have profited from using Stage-gates (Cooper 2008). In a study on the use of Balanced Scorecard in IT project alignment it was observed that using a BSC framework to make IT projects align with overall corporate strategy can possibly improve the traditional project deliverables: on-time, on-budget, and on-quality. These researchers found that, "using the BSC in project settings facilitates a wider perspective on project management successes and facilitates a team's linking to a wider range of strategic performance indicators that it can use to appropriately develop a clearer project vision and to more clearly monitor and control individual project goals and objectives" (Norrie and Walker, 2004).

Summary of the BSC-Stage-Gate Model

The Balanced Scorecard with Stage-gates framework brings together the representatives of all four BSC perspectives in a format that provides independent sources of information to the decision-maker. These representatives will typically be subject matter experts with significant stakes in the project which should encourage them to ask the project manager the "hard questions" that might otherwise not be asked.

A Theoretical Example of the BSC-Stage-Gate Model in Practice

A major internal software development project at Company X has reached the threshold for the BSC-Stage-gate governance model supervised by the PMO and it has cleared the First Stage-gate. At each subsequent project stage-gate, the representatives of the four BSC perspectives, the project manager and the project's executive sponsor participate in a meeting.

Second Stage-gate: Financial and Customer issues

- The PM provides a BSC-relevant project status report to the assembled stakeholders. As part of this report, routine metrics are covered such as the project's progress relative to cost and schedule, and the software defect rate.

- The Financial perspective representative points out that the project is 15 percent over budget, presenting a threat to its' required positive economic return. The Customer perspective representative cautions that an early functionality milestone was missed.
- The PM outlines a plan to reduce the project's spending rate later in the project. After the PM points out that key users have not previously been made available for functionality verification, the Customer perspective representative agrees to provide these users to assist the programmers in resolving functionality issues before the next Stage-gate is reached.
- The Executive sponsor determines that the economic return is still positive and decides to continue the project.

Third Stage-gate: Process and Learning & growth issues

- The PM provides a BSC-relevant project status report to the assembled stakeholders. The PM recommends the project's continuation according to plan.
- The PMO (Process) representative highlights that the project's software defect rate of 0.2 defects per thousand function points is double the firm's standard for this point in a project. The Learning & growth perspective representative points out that a module that would provide a function that fits with an upcoming initiative should now be elevated in priority and fully resourced.
- The PM explains that a key Quality Assurance (QA) tester was lost, leading to the high defect rate. As far as the Learning & growth-related module, the PM requests extra resources which threaten the project's budget.
- The PMO identifies a QA tester that can be transferred from a project that is winding down. The tester will be shifted to this project soon after this Stage-gate meeting. Additionally, the PMO recommends the reuse of some code in the company's software repository to form the core of the Learning & growth-related module. The reuse of this code eliminates the need for an additional resource and helps keep the project within its budget.
- Since this project will provide a positive economic return and contribute to an upcoming initiative, the Executive sponsor reaches a go decision, allowing the project to continue to the next stage.

Any one of the issues cited in the theoretical example above may not been brought to light for corrective actions without the combined BSC and Stage-gate framework.

CONCLUSIONS

Based on the discussions above and evidence from existing literature, this research proposes that the use of a combined Balanced Scorecard and Stage-gate framework is likely to provide more effective project governance than existing practices. The Balanced Scorecard framework and Stage-gates have been successfully implemented for IT projects independently of one another. This research recommends combining the two as a way to reduce information asymmetry with thorough, strategically-aligned, ongoing reviews of projects.

Proposition 1: Using the Balanced Scorecard framework at Stage-gates will reduce information asymmetry in project governance.

Proposition 2: Using the Balanced Scorecard framework at Stage-gates will improve the likelihood of early termination of projects that would otherwise yield negative economic returns.

Implications for Practice and Research

For IT project practitioners, the use of the Balanced Scorecard framework at Stage-gates will reduce information asymmetry and result in better project governance decisions. This will lead to early detection of projects that will not add economic value to the firm and enable executives to make informed and timely decisions for their discontinuation. The timely decisions to stop unwarranted project continuation will lead to reduction in waste of resources and result in IT delivering increased business value to the firm. Future research involving an empirically tested simulation game of this proposed model is planned.

Limitations for Practitioners

Previous research has indicated that a strict adherence to the Stage-gate process tends to discourage the development of novel, new products and to impair corporate learning (Sethi and Iqbal, 2008). As a result, a limitation of this research is that if project governance teams apply Balanced Scorecard to Stage-gates in a too-strict manner, it may discourage the introduction of novel, “game-changing” IT projects. This is a serious concern as novel IT projects are often those offering

the greatest risks *and* rewards. This also has implications for the proposed model's Learning perspective of the Balanced Scorecard in project Stage-gates.

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