Towards an Integrated Framework of Project Performance

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ABSTRACT

Successful management of projects is an important value-creating activity for organizations worldwide. Billions of dollars are invested annually in the creation of new systems and processes to ensure some level of sustained competitiveness. These projects are usually assessed based on the "triple constraints" variables; scope, time and cost. This model is championed by the project management (PM) bodies worldwide and is widely adopted within industries. As the project landscape changed over the last couple of decades due to factors such as globalization and increased competitiveness, it has become increasingly evident that this level of assessment is incomplete, as both researchers and practitioners have raised questions. In response, researchers have begun to evaluate alternative measurements of project performance. Despite this trend, the academic literature on alternative performance metrics remains limited. This paper proposes a measurement framework; the Project Performance Scorecard that incorporates information systems (IS) success perspectives and the Balance Scorecard approach. Six dimensions of assessment are proposed: Project Process, Stakeholder, Learning & Innovation, Benefit, Quality and Use perspectives. It is believed that this approach may provide a more cogent perspective on project performance while providing industry analysts with an alternative measurement tool to value project contribution.

Keywords: project; project success; project performance; IS Success; project management; project performance scorecard; balanced scorecard

INTRODUCTION

Projects and the successful management of projects provide strategic benefits to organizations. Trillions of US dollars are invested in information systems (IS) related projects worldwide annually (Seddon et al., 1999). With these significant investments, organizations have a vested interest in the successes of these ventures. Furthermore, it is prudent to have an accurate depiction of the state of project activities and outcome to assist in the strategic management process. Despite this apparent need, there has been a conundrum within the field on the best, most appropriate method to assess the performance of these projects. Empirical studies have unearthed severe problems with of IS projects (Ewusi-Mensah & Przasnyski, 1991; King, 1997; Standish, 1994, 2004) and successful IS projects are quite rare (Agarwal & Rathod, 2006).

The widely cited 1994 Chaos Report revealed that a staggering 84% of IS projects have failed, or are challenged, and only a meager 16% succeed (Standish, 1994). However, there was a slight improvement in 2004 with a 29% success rate (Standish, 2004). These failures have given rise to the perception of a "software crisis" (Duggan, 2004; Glass, 2006). As a consequence, researchers and practitioners moreso have been struggling with providing a remedy for these failed systems. Researchers have contended that there are apparent disparities between research and practice (Glass, 2005, 2006) and have called for a "new theory of project success" (Glass, 1999). This phenomenon presents some interesting questions. *Do these studies depict an accurate picture? Are the current performance measures accurate or sufficient? Will alternative measurements provide a different outlook?*

This paper seeks to address the latter question by providing an integrated framework for measuring project performance, the *Project Performance Scorecard*. This will be achieved through the integration of multiple perspectives of performance measurement, including IS Success models and the Balanced Scorecard. Based on empirical evidence, the "triple constraints" methodology has been widely accepted in practice as the de facto standard for measuring project performance for decades. While there is merit in this approach, projects involve complex and dynamic activities, and evaluation of IS investments is a notoriously difficult area (Fitzgerald, 1998), thus performance criteria needs to take into consideration all aspects of the project (Wateridge, 1998). Additionally, as the dynamism of organizations evolves due to factors such as increased globalization and institutional pressures; questions have been raised as to the sufficiency of this method for the complex and dynamic project process. In an effort to extend the cumulative tradition in project management (PM) research, a multi-dimensional approach is proffered to provide a parsimonious assessment that can be adopted by practitioners.

Several alternatives to the triple constraint methodology have been explored in the literature (Atkinson, 1999; Bryde, 2003, 2005; Morris & Hough, 1987; Nelson, 2005; Wateridge, 1998) yet the adoption in practice is not yet widespread. Additionally, researchers have primarily focused on identifying critical factors for providing some level of assurance in achieving a predetermined level of project performance, e.g. (Cooke-Davies, 2002; Ewusi-Mensah & Przasnyski, 1991). This research therefore adds to the extant literature through the provision of an integrated and cogent perspective grounded in IS theory. The seminal contribution of Delone and McLean (1992) and subsequent studies (DeLone & McLean, 2003; Seddon, 1997; Seddon et al., 1999) are considered a strong theoretical pillars for the *Project Performance Scorecard*. The models posit that service quality, information quality, system quality, information use and user satisfaction are dimensions of IS Success. Empirical evidence supports that these dimensions provide strong theoretical support (Rai et al., 2002). The well cited balanced scorecard presents an approach to measuring organizational performance (Kaplan & Norton, 1993). It is aimed at providing a comprehensive view of the performance of the organization through four perspectives: financial, customer, business process and learning. One can therefore conjecture that these models may be used as the basis for evaluating IS projects.

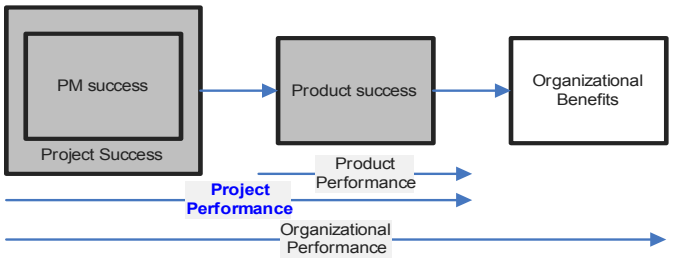
Performance measurement involves the processes of assessing the progress against predetermined objectives (Bourne et al., 2003). Project performance can therefore be considered as the process by which the project progress is measured against predetermined objectives to determine "success" or "failure" of which the triple constraints methodology is the standard. Atkinson (1999) suggested that it is time to move on from time, cost and quality criteria of success due to its limitations. Despite this advice, empirical evidence suggests that the triple constraint assessment is largely adopted by PM bodies such as Project Management Institute (PMI) and Association of Project Management (APM). The evaluation, more so the accurate evaluation of project performance is of strategic importance; according to (Ewusi-Mensah & Przasnyski, 1991), evaluating information systems is increasingly becoming a major concern among senior management.

The perspectives of project success are briefly discussed in the following section as it is important to understand success in order to provide an accurate view of performance. This is followed by a summary of the literature on project performance/success along with the perspectives on performance/success criteria. The exploratory framework, the *Project Performance Scorecard* is then explicated to provide an alternative integrated measurement tool and the paper ends with some concluding remarks including research limitations and research directions and implications.

DEFINING PROJECT SUCCESS

Projects bring about change and project management (PM) is seen as the most efficient way of managing these changes (APM, 2006). The management of projects ranges from unstructured to highly structured initiatives. The inclusion of PM best practices provides credence to the structure and organization of the projects managed by organizations. Project is defined by the PMI as *a temporary endeavor*

Figure 1. Project performance



undertaken to achieve a unique product, service or result (PMI, 2004), or a *unique, transient endeavors undertaken to achieve a desired outcome* (APM, 2006). PM is therefore defined as *the process by which projects are defined, planned, monitored, controlled and delivered such that the agreed benefits are realized* (APM, 2006) and *the application of knowledge, skills, tools and techniques to project activities to meet project requirements* (PMI, 2004).

The realization of these project benefits or requirements is necessary for the achievement of strategic objectives. There is very little agreement in previous studies as to what really constitutes project success (Shenhar et al., 2001) as researchers have put forward various views on project success. Project success is measured against project objectives while PM success is measured against the triple constraints criteria (Baccarini, 1999; deWit, 1988). Baccarini (1999) further outlined project success as consisting of two components: PM success and product success, where product success is seen as the effects of the project's final product. The divergence in perspectives has resulted in a lack of consistent definition of project success, it is therefore uncommon to present both processes as a single homogenous group (Baccarini, 1999).

It is apparent that there are three distinct processes that are considered in the project success discourse; *PM success, project success and product success*. (Wateridge, 1998) suggests that there is need to address the process and the outcome in assessing project success. The paper's interpretation supports the perspective the processes are intrinsically linked and considers that project success may be seen as an outcome of PM success. This complex interrelationship culminates into product success and organizational benefits over time (see figure1). Thus, project performance is based on PM success (*measured against PM objectives, inclusive of triple constraints*) and project success (*measured against overall project stakeholders objectives*) and product success (*measured against the value of the project outcome to the project and client organizations*). Therefore in analyzing this phenomenon the paper will consider the full spectrum of the project performance components.

PERSPECTIVES ON PERFORMANCE CRITERIA

Project being a complex and dynamic endeavor has numerous objectives, therefore criteria for measuring project success must therefore reflect different views (Struckenbruck, 1986). A survey (Sofian, 2003) of 142 respondents confirmed that project stakeholders have various perspectives on project success. The majority agreed that cost, schedule, quality, functionality and customer satisfaction were good assessment of project success. The creation of organizational learning, effectiveness and efficiency performance, and ability to execute changes were other consideration. Similarly (Agarwal & Rathod, 2006) research among software projects found that cost, schedule functionality and quality were important criteria while customer satisfaction, unique priorities being relatively minor considerations.

Several other researchers have formulated perspectives on success and performance criteria with the common theme being triple constraints. Atkinson (1999) suggested that practitioners should try to prevent type II error by moving away from the triple constraints criteria assessment. (Linberg, 1999) suggested that substantial learning which can be applied to future projects was the critical criteria from the developer's perspective. Organizational value, benefit or profitability were also considered (Morris & Hough, 1987; Nelson, 2005; Turner, 1993; Wateridge, 1998). Atkinson (1999) formulated the Square Root model that incorporates Deleone & McLean's IS success factors and organizational and stakeholder benefits. Organizational benefits include improvements in efficiency, effectiveness, profitability and learning. Benefits to stakeholders consider satisfaction of project results, learning impact to environment. (Nelson, 2005) used similar measures with the dimensions being value, use and learning from the project, and suggested that these be a part of the project retrospectives process. (Bryde, 2003) considered the quality perspectives based on the EFQM Excellence model in developing the PMPA, Project Management Performance Assessment. The model includes tools used to measure the level of performance amongst project including leadership, team, policy and strategy, partnerships and resources, KPIs. Additionally, eight quality dimensions should be considered for organizational leveraging; performance, features, reliability, conformance, durability, serviceability, aesthetics, and perceived quality (Garvin, 1987). Especially, for IS projects, these criteria are important in assessing not only the project but the project outcome.

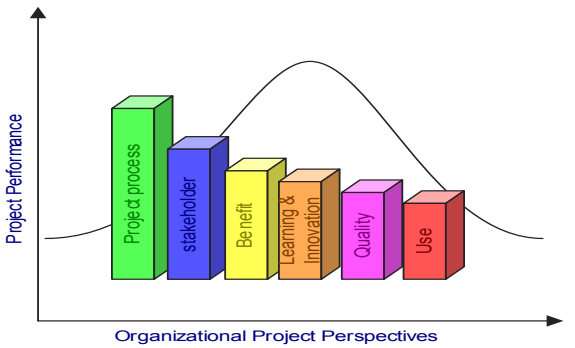
It is widely accepted that IS success is the principal criteria for IS assessments (Rai et al., 2002), with multiple perspectives. Delone & McLean (1992) found through extensive literature review that IS success could be explained by six dimensions: information quality, system quality, information use, user satisfaction, individual and organizational impact. The framework was extended to include service quality (DeLone & McLean, 2003) while Seddon (1997) posits that IS use is a consequence of IS success. Another performance measurement, the balance scorecard posits that the business process, client, financial and learning perspectives are the balanced approached to measuring performance within the organization (Kaplan & Norton, 1993).

PROJECT PERFORMANCE SCORECARD

In extending the literature, an exploratory framework is constructed that is primarily underpinned by IS Success and Balance Scorecard. It is put forward that this approach provides a cogent perspective as it accounts for the complexity and dynamism of projects. The *Project Performance Scorecard* seeks to theorize a perspective that span the realms of the project processes while taking into consideration the expectations of all the stakeholders. Based on the context, each dimension may play greater importance. The six dimensions interact as each has an influence on its counterpart, for example the stakeholder requirements may include quality and usability items. The dimensions are:

1. **Project Process perspectiv**e. Measures indicating key project processes, including triple constraints criteria. The key knowledge areas of integration, scope, time, cost, quality, human resource, communication, risk and procurement management (PMI, 2004) are assessed to measure the extent that they were adopted throughout the project.
2. **Stakeholder perspective**. Measures indicating stakeholders' expectations and objectives. It is essential that project managers obtain consensus from all stakeholders on the criteria for success (Wateridge, 1998). Based on the nature of the projects stakeholders may differ. The major stakeholders include the customer, client/sponsor and project team. The defined expectations, objectives, requirements and specifications are considered against actual outcome.
3. **Benefit perspective**. Benefits indicate the gains or advantages garnered throughout the project process. This involves measures indicating the financial and non-financial performance of the project outcome. Such an assessment may be over a period of time as the results may not be seen immediately.
4. **Learning and Innovation perspective**. Measures indicating project learning from the perspective of the project organization and/or client organization. Additionally incorporating formal and informal knowledge management practices of the project process may provide short and long term benefits to the organization, e.g.(Barclay & Osei-Bryson, 2006). Tiwana (1999) suggests that organization may face additional expenditure and challenges through repeated mistakes. Therefore, it important to manage learning and knowledge in such a way to have it accessible for the current project and future projects
5. **Quality perspective**. Garvin's (1987) discussion on dimensions of quality is applicable within this perspective. Depending on the nature of the project, environmental context and the stakeholders' requirements particular variables may be more applicable than others.
6. **Use perspective**. Measures indicating the use and usability of the project outcome. TAM (Davis, 1989), the seminal adoption model criteria, which also formed the basis of IS success models, are applicable instruments in accessing the performance of projects.

Figure 2. Project performance scorecard



A conceptualization of the six dimensions of the *Project Performance Scorecard* to depict the dynamism of the measurements based on the project and organizational context is shown (see Figure 2).

CONCLUDING REMARKS

The research is at its embryonic stage and is limited in its coverage of other alternative performance measurements. Future research directions involve the extension of the breadth of the study and the inclusion of other domain perspectives to refine the assessment framework. The identification and explication of goals and measures for each dimension are also recommended. Empirical case studies to improve the understanding of the how the *Project Performance Scorecard* will perform under different organizational project contexts and the investigation of alternative measurements under similar contextual framework also offer interesting research.

Possible research direction include two main paths; a consistent taxonomy on project success, and additional project performance metrics that are aligned to organizational strategic objectives. A consistent taxonomy is sought as the PM discipline evolves which will help in providing practical solutions, consistent with Delone & Mclean's (1992) view that if IS research is to make a contribution to practice then well defined measurements are important. Projects differ on various endogenous and exogenous factors such as complexities, purpose, organizational context, skill complement, it is therefore important to consider multiple perspectives and related disciplines to help explain this phenomenon.

Realistic performance measurements and assessments are becoming increasingly important as organizations continue to face internal constraints and institutional pressures. The research asserts that *Project Performance Scorecard* will provide a different outlook on project performance. It is a tangible tool for practitioners to adopt and assist in the management and assessment of their projects. Additionally the research adds to research through the provision of an additional perspective to help measure project performance.

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