Project performance management using balanced score card (BSC) approach

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Prepared by Ilango Vasudevan, Consulting Director, SaraS
Project Performance Management Scorecard (PPMS) Using the ABSC Framework

By Ilango Vasudevan, PMP

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Context

Organizations around the globe are under increasing pressure to innovate, improve, introduce, and process efficiency and new products. Planning cycles are diminishing and so is the need to periodically revisit the enterprise strategy. Any such enterprise strategy relies heavily on projects to deliver results, leading to a situation in which project performance is directly associated with the enterprise’s ability to deliver its objectives. The situation has placed much pressure on project managers to find new and effective ways to deliver project performance. Project performance is the end state and outcome of projects. It is an outcome of complex and inter-dependencies between a number of knowledge areas, phases, stakeholder expectations, and the dynamic “cause and effect” relationship between different project variables. Given the strong correlation between project performance and organizational performance, our experts researched the suitability of well-accepted enterprise performance management systems and frameworks in the context of project performance.

This paper explains how the Balanced Scorecard (BSC) framework1 can be leveraged to enhance project performance management. The BSC framework is an effective tool to realizing enterprise strategy by cascading strategy into a set of objectives, Key Performance Indicators (KPIs), metrics, and targets across four dimensions: finance, customer, process, and learning/growth. The relation between KPIs across dimensions are depicted as a set of “cause and effect” diagram, resulting in a complex yet structured mechanism of defining success through

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1 A description of the Balanced Scorecard (BSC) method is given at the end of this article.
metrics. The concept of "lead" and "lag" indicators was central to the BSC. The BSC shifted focus away from lag indicators (e.g., financial results) to lead indicators (what causes the results). The lead indicators provide early warning signals and corrective actions to achieve the strategic objectives. The resultant framework "project performance management scorecard" actively integrates the following mutually exclusive, yet collectively exhaustive objectives:

- Project strategy and objectives;
- Project life cycle objectives;
- Project management objectives; and
- Balanced scorecard practices.

The success of applying the framework and the result will depend on implementation steps (provided below), the project manager's ability to apply the framework to a given context, and a number of other factors internal and external to the project. The framework is repeatable in nature; however, the outcomes and project contexts may be entirely different from one project to another.

Project objectives (1) concern the core purpose of the project. Is the project achieving the intended objectives? The project life cycle objectives (2) concern the performance of each phase of the life cycle. The project life cycle will differ, based on the nature of the individual project. Project management objectives (3) concern the performance of the project management processes from initiation through closure.

The Adjusted BSC Framework (ABSC)

Fine adjustments have been made to some of the dimensions of the BSC framework to enhance the effectiveness of the project performance context. The adjusted BSC components are provided below for clarification; henceforth, the adjusted BSC will be referred to as the ABSC.

ABSC Perspectives: The four dimensions used in our ABSC are (the mappings are provided in parentheses):

- Finance (refers to project costing)
- Stakeholder (instead of customer)
- Process
- Learning (more significance given to specific knowledge areas like risk, quality, and so forth)
Major emphasis is placed on the definitions of lead and lag indicators. Lag indicators are the ones that provide success indication at the end of the event or "post facto" analysis. For example, budget variance analysis provides performance about actual versus budget, but after the money has been spent. Most of the project management measures as defined in EVM (earned value management) principles may be classified as lag indicators (please note that most but not all will be classified as such). The lag indicators (EVM metrics) remain constant because the project management life cycle is constant. Most of the lag indicators could be pre-defined based on the project management life cycle (refer to the implementation guideline).

Lead indicators provide a proactive set of metrics and measures that can influence and effect overall objectives. For instance, if requirement gathering is only 90% complete (% completion could be defined as an indicator), then one could very well infer that it will affect scope of work and hence time and cost performance (lag indicators). Similarly, if testing results in a number of high-risk items more than X from the testing process (indicator: number of high-risk items not to exceed X numbers), the project quality will be impacted, leading to re-work (more effort and more cost). Most of the lead indicators will have to be defined at project life cycle phases separately and dovetailed to the lead indicator, using the cause and effect relation.

Cause and effect: The implementation guideline provides steps to define the cause and effect diagram between the various lead and lag measures across the four dimensions.

Framework and Implementation Guideline

To enhance the learning process, the framework is defined in the following five simple steps:

1. Establish project objectives (high level) and linkage to Project Life Cycle (PLC) phases (where possible);
2. Pre-define project management KPIs (lag indicators as per ABSC);
3. Develop PLC objectives and KPIs (lead indicators);
4. Integrate the KPIs using cause and effect;
5. Define impact analysis framework; and
6. Monitor as part of the project management process.

Ane-Commerce case study that illustrates the implementation guideline. The e-Commerce implementation project of interest to this paper is about realizing a Business to Consumer (B2C) portal to market and delivering e-Learning material on a subscription model. The project life cycle of these types of projects typically consists of the following major phases:

- Requirements gathering
- Design and development of portal
- Content development
• Setting up the e-Learning portal
• Pilot testing
• Mass production strategy
• Handover to continuous improvement team

Step 1: Establish project objectives (high level) and linkage to PLC phases (where possible)

The project objectives are listed as qualitative statements or, in certain cases, with quantification. The techniques of identifying the objectives are beyond the scope of this paper. Once the objectives list is available, the project manager should conduct meetings with key stakeholders to document sub-objectives or, more specifically, KPIs that can be identified with project phases. Some of the objectives of the e-Learning portal will be to:

- Increase the service delivery penetration to a larger audience
- Facilitating online, convenient learning
- To continuously upgrade skills and developments in the area of e-Commerce
- Reduce learning cost by 50%, thus making it more affordable

The project life cycle phases should ensure that the above objectives are met. The performance indicators (during the project life cycle) required to meet the above objectives are as follows:

Objective 1: Increase the service delivery penetration to a larger audience

Indicators: To cover the marketing department requirements during requirements gathering and get their sign off (requirements gathering), multiple-language capability (design and development), and easy interface (set up, testing)

Objective 2: To make available “anytime anywhere” learning

Indicator: Ensure redundancy in the design (design phase), scheduling feature (requirements gathering), and so on.

Objective 3: To continuously upgrade skills and developments in the area of e-Commerce

Indicator: Scalability of the technical infrastructure (robust design), design and develop a robust content management system to manage updates to content.

Objective 4: Reduce learning cost by 50%, thus making it affordable
Indicator: This is a tricky objective because it is an outcome achieved over a period of time and will depend on factors beyond the project team (like telecommunications, cost, etc.). Increase the target base of the market to reduce the fixed cost per participant and use shared services to reduce the overall cost, and so forth.

The following tabulation can help capture the above relation in the form of a traceability matrix.

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Requirements gathering</th>
<th>Design &amp; development</th>
<th>Phase n</th>
</tr>
</thead>
<tbody>
<tr>
<td>Increase the service delivery penetration to larger mass</td>
<td>• Sign off marketing requirements</td>
<td>• Multi-lingual capability</td>
<td>• Interface testing using ‘user testing’ model</td>
</tr>
<tr>
<td>To make available any time any where learning</td>
<td>• List of indicators</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Objective n</td>
<td>• List of indicators</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Please note: Some objectives (e.g., Objective 4 above) may not be directly identifiable with phases, but in such cases, follow techniques like the fishbone method2 to identify indicators. For example, in an ERP implementation, if the objective is to reduce inventory levels, then some of the indicators of success will relate to data characteristics like quality of data, availability of complete data, statistical analysis etc. Just configuring the solution will not yield the result.

Note: This is an optional step and the project manager should carefully decide about the inclusion. Some of the project objectives may be long term in nature and it will be very difficult to identify the objectives directly to phases of the project life cycle.

**Step 2: Pre-defined project management KPIs (Lag indicators)**

Project management as a discipline has evolved over a number of years. There are established standards and frameworks that are advancing the discipline to higher levels of maturity as a process. There are well-defined processes and knowledge areas supporting the project management disciplines. The following diagram provides lead indicators across various project management domains and pre-mapped to the ABSC dimensions. In general, given the nature of lag indicators, the indicators remain more static in nature; however, depending on the specific project, the project manager may want to re-emphasize certain indicators, while dropping a few others. For example, a

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2 Please refer to the PMBOK® Guide for details about the technique
project that may not involve procurement processes could leave the indicators that are specific to the procurement processes. The project manager, along with the team, will finalize the applicable indicators from the lag indicator matrix already available and set targets.

The following table can be used to capture the lag indicators and their target measures:

<table>
<thead>
<tr>
<th>Project management knowledge areas</th>
<th>Objectives</th>
<th>Indicators</th>
<th>Target measures</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk</td>
<td>• Minimize risk impact to less than 5% of project cost</td>
<td>• Closely monitor high risk items (costing more than USD 10,000 impact)</td>
<td>• Keep high risk items to less than 3 at any given time in the project</td>
</tr>
<tr>
<td>Cost</td>
<td>• Keep the cost overrun to less than 5% of project baseline</td>
<td>• CPI</td>
<td>• Keep CPI less than 1.05 all along life cycle</td>
</tr>
<tr>
<td>Objective n</td>
<td>• List of indicators</td>
<td>• Escalation of CPI more than 1.05</td>
<td></td>
</tr>
</tbody>
</table>

Step 3: Develop PLC objectives and KPIs (lead indicators)
In this step, the project manager will facilitate workshops with the project team members and the key stakeholders to identify the lead indicator (the software vendor team will be one of the key participants), targets, and pre-requisites.

3.1 Identifying indicators: Each of the project life cycle phases will be considered (one at a time), and the team will brainstorm performance indicators that will determine the success of the phase. Let’s use the “requirements gathering” phase of the life cycle as an example. The following list provides the typical success indicators of this phase.

- Meeting all the business users, like the training department, human resources, finance (who will provide input to the e-Learning system)
- Ensuring sign off on the requirements from each process owner
- Conducting workshops with users to discuss the leading practices within the e-Learning industry segment
- Number of iterations in requirements gathering not to exceed two cycles.

It is recommended to have between three and five performance measures for each of the phases (rule of thumb).

3.2 Setting targets for the measures: The next step for the team is to identify targets and pre-requisites. For instance, in order to meet all the business users, there should be an approved list of business users to be identified by the sponsor; similarly, the teams could set aside one week as the deadline for the requirements sign off.

3.3 Identify responsibilities

For each of the measures, assign responsibilities to the project team members as to who will be responsible for the performance as well as the monitoring. The assignment will be important during the realization phase to track the progress status and activity monitoring.

At this stage, the set of “lead indicator” tabulations will look as depicted in the following table:
Repeat Steps 3.1 through 3.3 for the rest of the phases in the project life cycle. The exercise will result in a comprehensive list of lead indicators that are very specific to the project life cycle phases.

Remember, this exercise has to be performed by experienced project managers who will play the roles of facilitators; moreover, it is recommended that the presence of SME resources will add significant value.

**Tools and Techniques**

Brainstorming, mind maps, indicator profiling, workshops, design of experiments, control limits

**3.4 Map the lead indicators to the dimensions**

In this step, the list of indicators identified in Step 1 will be mapped to the ABSC dimensions. This exercise sets the basis for profiling the lead indicators to the performance scorecard framework. At a later stage, the indicators will be used in their respective dimensions to design the cause and effect properties.

The following diagram illustrates a few of the lead indicators from Step 1 above and mapped to the dimensions (as an illustration).
Step 4: Establish cause and effect relation

In this step, the project manager and the SME resources will establish the cause and effect relation between the lead and lag indicators.

4.1 Combine the lead and lag indicators: The lead and lag indicators identified in Steps 2 and 3 are brought into a single framework across the four dimensions

4.2 Establish the cause and effect, one indicator at a time: In this step, the project manager should consider each of the indicators one by one and verify the effect/impact of the measure on the rest of the measures.

For illustration purposes, let us take the example of indicators relating to the requirements gathering phase. One of the measures relating to sign off requirements, if not managed well, could lead to “scope creep,” which in turn could lead to increases in project cost, time, and perhaps risk. Similarly, if the numbers of iterations are going to be more than two, then the project time schedule may be challenged.
The team can use number sequences to identify the traceability of each cause and effect. Such representations will enable monitoring against the scorecard during the realizations phase.

4.3 Identify "high impact" conditions: In this step, tabulate the high-risk and high-impact areas. This is done by identifying a set of measures that indicate breach of agreed on control limits, leading to situations that require immediate attention and escalation. For instance, if the number of iterations in requirement gathering is beyond three, this indicates that there is a significant issue in the quality of resource and work. This may call for immediate management attention. Such high-impact issues could be captured using the following tabulation:

<table>
<thead>
<tr>
<th>Lead indicator</th>
<th>Impacted lag indicator (effects)</th>
<th>Impacted objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>On time sign off</td>
<td>• Time overrun</td>
<td>• Requirements may not be complete or subsequent phases could be impacted</td>
</tr>
<tr>
<td>Incomplete information</td>
<td>• Quality of deliverables</td>
<td>• Might impact service delivery to larger mass</td>
</tr>
<tr>
<td>(marketing)</td>
<td>• Testing results</td>
<td>• Might impact cost of service delivery</td>
</tr>
<tr>
<td>Objective N</td>
<td>• Introduces high risk items</td>
<td></td>
</tr>
</tbody>
</table>

Step 5: Monitor, manager, and report on performance against the ABSC objectives, KPIs, and targets.

Once the ABSC is in place, the project manager will start monitoring the project performance using the framework. As part of the project plan, the project managers should determine the project review meeting, the status reporting, as well as the various levels of information distribution that should occur as parts of the project. As part of the regular review, and depending on the specific project life cycle, the project manager could actively monitor the indicators specific to the phase, yet have oversight on the indicators pertaining to the subsequent phases as well.

In our view, the PPMS exercise provides an excellent mechanism with which to identify the key project metrics and measurements and link them in an integrated manner. The tool is an effective means of increasing the project success; moreover, if the exercise is done in a structured manner, it fosters an enduring understanding among the stakeholders, which leads to well-managed stakeholder expectations.
A Brief Note about the Balanced Scorecard (BSC)

The BSC framework was introduced to the business world by Robert S. Kaplan, and David P. Norton.

The BSC is a strategic tool that translates vision and strategy into a set of performance measures that are tightly integrated and comprehensive and that goes beyond the financial measures to include customer, process, and learning perspectives. In contrast to traditional financial measurement systems, the BSC focus is on solidifying an organization’s focus on its future success by setting objectives and measuring performance based on the above four perspectives. The customer’s perspective considers the business through the eyes of the customer, so that the organization retains a careful focus on customer needs and satisfaction. The internal (process) perspective focuses attention on the performance of the key internal business processes, which are the key lead indicators of financial success in the future. The learning perspective focuses on an organization’s people and infrastructure, which are the bases of all future success. The financial perspective measures the ultimate results that the business delivers to the shareholders. Together, these four perspectives provide a balanced view of the present and future performance of a business.


About the Author:

Ilango Vasudevan, PMP, has over 14 years of experience providing process and technology advice to manufacturing and government clients. He has been a project manager in more than fifty medium- to large-sized companies and is currently a consulting director of a owned start up consulting firm (www.sarasconsulting.com)