# *Chapter 1*

# Balanced Scorecard and the Project Manager

A study of 179 project managers and project management office managers found that although most organizations understood the importance of effective project management, they simply do not do a good job of managing their project management (PM) process. This translates to project outcomes less stellar than expected.

There are many different stakeholder groups involved in a typical project (e.g., business process users, owners, users, business managers, clients, etc.) so it is understandable that each of these stakeholder groups has different goals and objectives for assessing project outcomes. At the most basic level, the triple constraint methodology (time, cost, quality) is most often used to assess project success. However, many now believe that triple constraint does not account for the varied dimensions of projects that need to be considered in their assessments. Current research in this area finds that there is a real lack of agreement on not only what constitutes project success, but on methods for more comprehensive assessment of project outcomes (Barclay, 2008).

Given the varied dimensionality of a typical project, some have argued that there needs to be a distinction between PM success, in terms of the traditional triple constraints of time, cost, and quality, and project success, which is aligned with the product outcome of the project, and discerned through the stakeholders. Thus, it is quite possible to experience product success, but not PM success.

It is by now obvious that the traditional project measures of time, cost, and quality need to be enhanced by adding some additional project measurement dimensions, such as stakeholder benefits (e.g., customer satisfaction), product benefits

(competitive advantage, financial rewards), and preparing for the future (e.g., value, personal growth, etc.; Barclay, 2008).

Quite a few studies (Barclay, 2008; Lynn, 2006) suggest that an adaptation of the balanced scorecard business approach to performance management measurement provides just this sort of vehicle. Robert S. Kaplan and David P. Norton developed the balanced scorecard approach in the early 1990s to compensate for shortcomings they perceived in using only financial metrics to judge corporate performance. They recognized that in this new economy it was also necessary to value intangible assets. Because of this, they urged companies to measure such esoteric factors as quality and customer satisfaction. By the middle 1990s, balanced scorecard became the hallmark of a well-run company. Kaplan and Norton often compare their approach for managing a company to that of pilots viewing assorted instrument panels in an airplane cockpit: both have a need to monitor multiple aspects of their working environment.

In the scorecard scenario, as shown in Figure 1.1, a company organizes its business goals into discrete, all-encompassing perspectives: Financial, Customer, Internal Process, and Learning/Growth. The company then determines cause–effect relationships: for example, satisfied customers buy more goods, which increases revenue. Next, the company lists measures for each goal, pinpoints targets, and identifies projects and other initiatives to help reach those targets.

Departments create scorecards tied to the company's targets, and employees and projects have scorecards tied to their department's targets. This cascading nature provides a line of sight among the individuals, the projects they are working

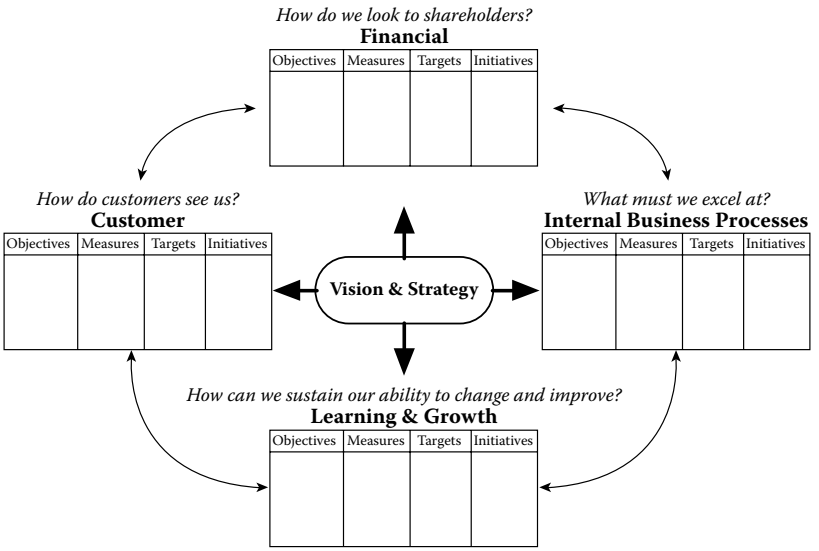


**Figure 1.1 The balanced scorecard.**

on, the units they support, and how that affects the strategy of the enterprise as a whole.

For project managers, the balanced scorecard is an invaluable tool that permits the project manager to link a project to the business side of the organization using a "cause and effect" approach. Some have likened balanced scorecard to a new language, which enables the project manager and business line managers to think together about what can be done to support or improve business performance.

A beneficial side effect of the use of the balanced scorecard is that, when all measures are reported, one can calculate the strength of relations among the various value drivers. For example, if the relation between high implementation costs and high profit levels is consistently weak, it can be inferred that the project, as implemented, does not sufficiently contribute to results as expressed by the other (e.g., financial) performance measures.

This first chapter examines the fundamentals of balanced scorecard as it relates to the precepts of project management. Balanced scorecard is examined in relationship to the organization and the people, processes, technologies, and products that are components of the organization's discrete projects, programs, and collaborative efforts.

## Adopting the Balanced Scorecard

Kaplan and Norton (2001) provide a good overview of how a typical company adapts to the balanced scorecard approach:

> Each organization we studied did it a different way, but you could see that, first, they all had strong leadership from the top. Second, they translated their strategy into a balanced scorecard. Third, they cascaded the high-level strategy down to the operating business units and the support departments. Fourth, they were able to make strategy everybody's everyday job, and to reinforce that by setting up personal goals and objectives and then linking variable compensation to the achievement of those target objectives. Finally, they integrated the balanced scorecard into the organization's processes, built it into the planning and budgeting process, and developed new reporting frameworks as well as a new structure for the management meeting.

The key, then, is to develop a scorecard that naturally builds in cause-and-effect relationships, includes sufficient performance drivers, and, finally, provides a linkage to appropriate measures, as shown in Table 1.1.

At the very lowest level, a discrete project can also be evaluated using balanced scorecard. The key here is the connectivity between the project and the objectives of the organization as a whole, as shown in Table 1.2.

**Table 1.1 Typical Departmental Sample Scorecard**

| *Objective* | *Measure/Metrics* | *End of FY 2010 (Projected)* |
|---|---|---|
| **Financial** | | |
| Long-term corporate profitability | Percentage change in stock price attributable to<br>Earnings growth | +25 percent per year for next 10 years<br>+20 percent per year for next 10 years |
| Short-term corporate profitability<br>1. New products<br>2. Enhance existing products<br>3. Expand client-base<br>4. Improve efficiency and cost-effectiveness | Revenue growth<br>Percentage cost reduction | +20 percent related revenue growth<br>Cut departmental costs by 35 percent |
| **Customer** | | |
| Customer satisfaction<br>1. Customer-focused products<br>2. Improve response time<br>3. Improve security | Quarterly and annual customer surveys, satisfaction index<br>Satisfaction ratio based on customer surveys | +35 percent, raise satisfaction level from current 60 to 95 percent<br>+20 percent |
| Customer retention | Percentage of customer attrition | –7 percent, reduce from current 12 to 5 percent |
| Customer acquisition | Percentage of increase in number of customers | +10 percent |
| **Internal** | | |
| Complete M&A transitional processes | Percentage of work completed | 100 percent |
| Establish connectivity | Percentage of workforce full access to corporate resources | 100 percent |

**Table 1.1 Typical Departmental Sample Scorecard (Continued)**

| *Objective* | *Measure/Metrics* | *End of FY 2010 (Projected)* |
|---|---|---|
| Improve quality | Percentage saved on reduced work | +35 percent |
| Eliminate errors and system failures | Percentage reduction of customer complaints<br>Percentage saved on better quality | +25 percent<br>+25 percent |
| Increase ROI | Percentage increase in ROI | +20–40 percent |
| Reduce TCO | Percentage reduction of TCO | –10–20 percent |
| Increase productivity | Percentage increase in customer orders<br>Percentage increase in production/employee | +25 percent<br>+15 percent |
| Product and services enhancements | Number of new products and services introduced | 5 new products |
| Improve response time | Average number of hours to respond to customer | –20 minutes, reduce from current level of 30–60 minutes to only 10 minutes or less |
| **Learning and innovations** | | |
| Development of skills | Percentage amount spent on training<br>Percentage staff with professional certificates | +10 percent<br>+20 percent |
| Leadership development and training | Number of staff attending colleges | 18 |
| Innovative products | Percentage increase in revenue | +20 percent |

*(continued)*

**Table 1.1 Typical Departmental Sample Scorecard (Continued)**

| *Objective* | *Measure/Metrics* | *End of FY 2010 (Projected)* |
|---|---|---|
| Improved process | Number of new products | +5 |
| R&D | Percentage decrease in failure, complaints | –10 percent |
| Performance measurement | Percentage increase in customer satisfaction, survey results | +20 percent |
| | Percentage projects to pass ROI test | +25 percent |
| | Percentage staff receiving bonuses on performance enhancement | +25 percent |
| | Percentage increase in documentation | +20 percent |

**Table 1.2 A Simple Project Scorecard Approach**

| *Perspective* | *Goals* |
|---|---|
| Customer | Fulfill project requirements<br>Control cost of the project<br>Satisfy project end users |
| Financial | Provide business value (e.g., ROI, ROA, etc.)<br>Project contributing to organization as a whole |
| Internal processes | Adhere to triple constraint: time, cost, quality |
| Learning and growth | Maintain currency<br>Anticipate changes<br>Acquire skillsets |

The internal processes perspective maps neatly to the traditional triple constraint of project management, using many of the same measures traditionally used (as discussed in this book). For example, we can articulate the quality constraint using the ISO 10006:2003 standard. This standard provides guidance on the application of quality management in projects. It is applicable to projects of varying complexity, small or large, of short or long duration, in different environments, and irrespective of the kind of product or process involved.

Quality management of projects in this International Standard is based on eight quality management principles:

1. Customer focus
2. Leadership
3. Involvement of people
4. Process approach
5. System approach to management
6. Continual improvement
7. Factual approach to decision making
8. Mutually beneficial supplier relationships

Sample characteristics of these can be seen in Table 1.3.

Characteristics of a variable (e.g., quality, time, etc.) are used to create the key performance indicators (KPIs), or metrics, used to measure the success of the project. Thus, as you can see from Tables 1.1 through 1.3, we've got quite a few choices in terms of measuring the quality dimension of any particular project.

## *Example: FedEx*

There are three key measurement indicators applied at FedEx. The goal of the *customer-value creation indicator* is to define a customer value that is not currently being met and then use technology to meet that need. Ultimately, the information produced by the system should be stored for analysis.

A hallmark of the "FedEx way" is that they really listen to their customers and create services to fulfill core needs. When FedEx initiated its overnight services in the 1970s, customers told them that their "peace of mind" required access to more extensive delivery information. The original tracking service was a tedious manual process requiring numerous telephone calls to a centralized customer service center. In turn, customer service had to call one or more of 1,400 operations centers to track a single package. This process was expensive and slow. Today's rapid online tracking capability was conceived to meet this need.

FedEx's tracking system also fulfills another important company requirement. The system automatically calculates whether the commitment to the customer was met by comparing ship date and service type to delivery date and

**Table 1.3 ISO 10006 Definition of Quality Management for Projects**

| *Quality Characteristic* | *Subcharacteristic* |
|---|---|
| Customer focus | Understanding future customer needs<br>Meet or exceed customer requirements |
| Leadership | Setting the quality policy and identifying the objectives (including the quality objectives) for the project<br>Empowering and motivating all project personnel to improve the project processes and product |
| Involvement of people | Personnel in the project organization have well-defined responsibility and authority<br>Competent personnel are assigned to the project organization |
| Process approach | Appropriate processes are identified for the project<br>Interrelations and interactions among the processes are clearly identified |
| System approach to management | Clear division of responsibility and authority between the project organization and other relevant interested parties<br>Appropriate communication processes are defined |
| Continual improvement | Projects should be treated as a process rather than as an isolated task<br>Provision should be made for self-assessments |
| Factual approach to decision making | Effective decisions are based on the analysis of data and information<br>Information about the project's progress and performance are recorded |
| Mutually beneficial supplier relationships | The possibility of a number of projects using a common supplier is investigated |

time. This information forms the basis of FedEx's money-back guarantee, and appears on customer invoices. More important, this statistic is aggregated for the internal index on service quality that is the focal point for corporate improvement activities.

Another key FedEx indicator is *performance support*. The goal here is to create appropriate tools that enable front-line employees to improve their personal performance using the information in FedEx's vast databases. Individual performance is then aggregated to location and geographic unit, and ultimately makes its way into the corporatewide statistics. These stats are available on every desktop in the company.

An example of performance support indicators, from the perspective of a courier, include:

1. Does the count of packages delivered equal the Enhanced Tracker's count of deliverables?
2. Does the count of revenue forms equal the Enhanced Tracker's count of shipments picked up?

As the courier is closing out the day's activities he or she uses a handheld device, the Enhanced Tracker, as a guide through this series of performance measurements. During the day, the Tracker records activity information and timer per activity as the courier does the job. Information from the handheld Tracker gets ported to the corporate database with the aggregated historical information ultimately used for manpower tracking, or comparison of actual achievements to performance standards.

Perhaps the most important indicator is *business goal alignment*. This is used to align the incentives of employees and management with corporate and customer objectives.

These indicators, then, form the basis for FedEx's balanced scorecard. The FedEx corporate philosophy, called "People, Service, Profit," guides all decisions.

## Attributes of Successful Project Management Measurement Systems

There are certain attributes that set apart successful performance measurement and management systems, including:

1. *A conceptual framework is needed for the performance measurement and management system.* A clear and cohesive performance measurement framework that is understood by all project managers and staff and that supports objectives and the collection of results is needed.
2. *Effective internal and external communications are the keys to successful performance measurement.* Effective communication with employees, process owners, end users, and stakeholders is vital to the successful development and deployment of project management-oriented performance measurement and management systems.
3. *Accountability for results must be clearly assigned and well understood.* Project managers must clearly identify what it takes to determine success and make

sure that staff understand what they are responsible for in achieving these goals.

4. *Performance measurement systems must provide intelligence for decision makers, not just compile data.* Performance measures should relate to strategic goals and objectives, and provide timely, relevant, and concise information for use by decision makers at all levels to assess progress toward achieving predetermined goals. These measures should produce information on the efficiency with which resources (i.e., people, hardware, software, etc.) are transformed into goods and services, on how well results compare to a program's intended purpose, and on the effectiveness of activities and operations in terms of their specific contribution to program objectives.
5. *Compensation, rewards, and recognition should be linked to performance measurements.* Performance evaluations and rewards need to be tied to specific measures of success by linking financial and nonfinancial incentives directly to performance. Such a linkage sends a clear and unambiguous message as to what's important.
6. *Performance measurement systems should be positive, not punitive.* The most successful performance measurement systems are not "gotcha" systems, but learning systems that help identify what works—and what does not—so as to continue with and improve on what is working and repair or replace what is not.
7. *Results and progress toward program commitments should be openly shared with employees, customers, and stakeholders.* Performance measurement system information should be openly and widely shared with employees, end users, stakeholders, vendors, and suppliers.

If used *properly*, the balanced scorecard approach provides a framework to accomplish these ends. Notice the emphasis on the word "properly." Balanced scorecard is not a panacea for all project management problems. Just implementing it willy-nilly is not going to solve performance problems, nor will it enhance alignment among the project, the business units, and corporate strategy. For balanced scorecard to work, it has to be carefully planned and executed.

## Project Management Office

Project management is actually a set of discrete steps that sees a project from inception to closure, as shown in Figure 1.2.

A particular project is just one of many projects that will be implemented at any given time within a typical organization. A particular project might be one out of many projects for a specific program. A program is related to a corporate strategy, for example, "become an e-book publisher." In our e-book example, there might be multiple projects related to this goal. One project might be to develop a Web site

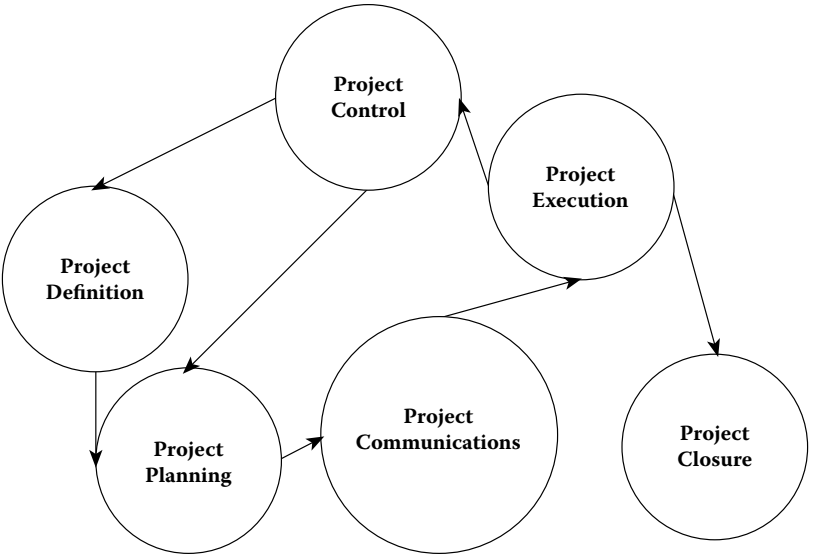


**Figure 1.2 Project management perspectives.**

where e-books could be sold. Another project might be to develop the software that converts print books into e-books.

Most organizations will have several ongoing programs all in play at once, all related to one or more business strategies. It is conceivable that hundreds of projects are ongoing, all in various stages of execution. Portfolio management is needed to provide the business and technical stewardship of all of these programs and their projects, as shown in Figure 1.3.

Portfolio management requires the organization to manage multiple projects at one time creating several thorny issues (Dooley, Lupton, and O'Sullivan, 2005); the most salient ones are shown in Table 1.4.

Not only does each project need to be measured, but the portfolio as a whole should be assessed, sample internal business process metrics for which can be seen in Table 1.5. The baseline indicates that the metric is informational, for example, only the raw value will be displayed (i.e., aggregated by the specified period: weekly, monthly, etc.). The targets should be set to default (or 0 in the case of baselined targets).

Portfolio management is usually performed by a project management office (PMO). This is the department or group that defines and maintains the standards of process within the organization. The PMO strives to standardize and introduce economies of repetition in the execution of projects. The PMO is the source of documentation, guidance, and metrics in the practice of project management and execution.

A good PMO will base project management principles on accepted industry standard methodologies. Increasingly, influential industry certification programs such as ISO9000 and the Malcolm Baldrige National Quality Award (see appendices),

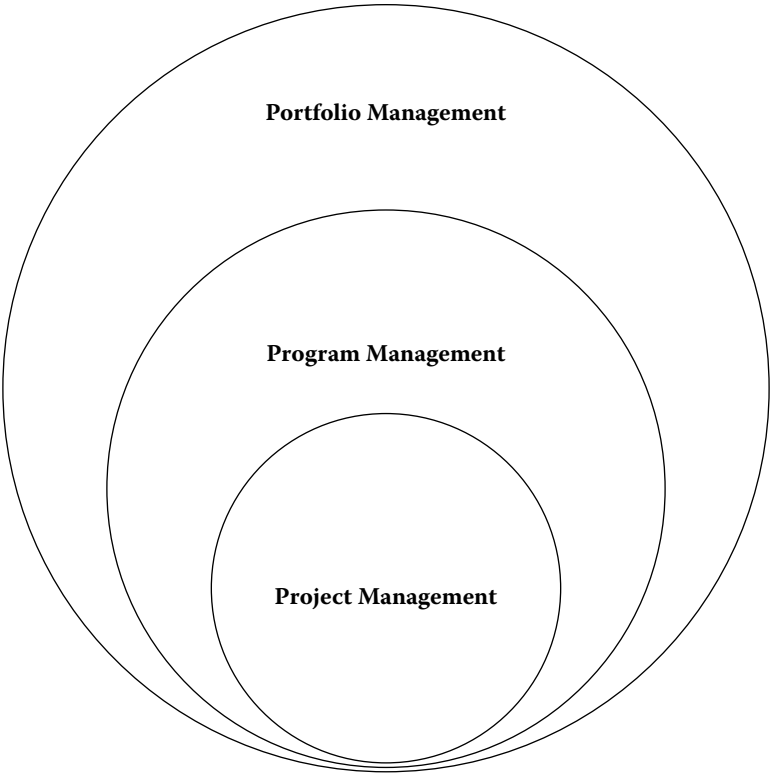


**Figure 1.3 Portfolio management.**

**Table 1.4 Multiple Project Management Issues**

| *Responsibility* | *Issue* |
|---|---|
| Alignment management | Balancing individual project objectives with the organization's objectives |
| Control and communication | Maintaining effective communications within a project and across multiple projects<br>Maintaining motivation across project teams<br>Resource allocation |
| Learning and knowledge management | Inability to learn from past projects<br>Failure to record lessons learned for each project<br>Lack of timely information |

**Table 1.5 Sample Portfolio-Related Metrics for the Internal Business Process Perspective**

| *Objective* | *Measure* | *Target* |
|---|---|---|
| Enhance applications portfolio | Age distribution of applications | Baseline |
| | Technical performance of applications portfolio | Baseline |
| | Rate of product acceptance | >=95 percent |

government regulatory requirements such as Sarbanes–Oxley, and business process management techniques such as balanced scorecard have propelled organizations to standardize processes.

If companies manage projects from an investment perspective—with a continuing focus on value, risk, cost, and benefits—costs should be reduced with an attendant increase in value. This is the driving principle of portfolio management.

By now it should be obvious that a major emphasis of PMO is standardization. To achieve this end, the PMO employs robust measurement systems. For example, the following metrics might be reported to provide an indicator of process responsiveness:

1. Total number of project requests submitted, approved, deferred, and rejected
2. Total number of project requests approved by the portfolio management group through the first project request approval cycle (providing an indicator of quality of project requests)
3. Total number of project requests and profiles approved by the portfolio management group through secondary and tertiary prioritization approval cycles (to provide a baseline of effort versus ROI for detailed project planning time)
4. Time and cost through the process
5. Changes to the project allocation after portfolio rebalancing (total projects, projects canceled, projects postponed, projects approved)
6. Utilization of resources: percentage utilization per staff resource (over 100 percent, 80 to 100 percent, under 80 percent, projects understaffed, staff-related risks)
7. Projects canceled after initiation (project performance, reduced portfolio funding, reduced priority, and increased risk)

Interestingly, PMOs are not all that pervasive in industry. However, they are recommended if the organization is serious about enhancing performance and standardizing project management performance measurement. Implementation of a PMO is a project unto itself, consisting of three steps: take inventory, analyze, and manage:

1. A complete inventory of all initiatives should be developed. Information such as the project's sponsors and champion, stakeholder list, strategic alignment with corporate objectives, estimated costs, and project benefits should be collected.
2. Once the inventory is completed and validated, all projects on the list should be analyzed. A steering committee should be formed that has enough insight into the organization's strategic goals and priorities to place projects in the overall strategic landscape. The output of the analysis step is a prioritized project list. The order of prioritization is based on criteria that the steering committee selects. This is different for different organizations. Some companies might consider strategic alignment to be the most important, whereas other companies might decide that cost–benefit ratio is the better criterion for prioritization.
3. Portfolio management is not a one-time event. It is a constant process that must be managed. Projects must be continually evaluated based on changing priorities and market conditions.

It is the analyze step where the balanced scorecard should be created. The scorecard should be fine-tuned in the prioritize phase and actually used in the manage step.

In all likelihood the PMO will standardize on a particular project management methodology. There are two major project management methodologies. The Project Management Body of Knowledge (PMBOK), which is most popular in the United States, recognizes five basic process groups typical of almost all projects: initiating, planning, executing, controlling and monitoring, and closing. Projects in Controlled Environments, PRINCE2, which is the de facto standard for project management in the United Kingdom and is popular in more than 50 other countries, defines a wide variety of subprocesses, but organizes these into eight major processes: starting a project, planning, initiating a project, directing a project, controlling a stage, managing product delivery, managing stage boundaries, and closing a project.

Both PRINCE2 and PMBOK consist of a set of processes and associated subprocesses. These can be used to craft relevant metrics, as shown in Table 1.6.

Inasmuch as the PMO is the single focal point for all things related to project management, it is natural that the project management balanced scorecard should be within the purview of this department.

**Table 1.6 Sample PRINCE2 Related Metrics**

| *Process* | *Subprocess* | *Associated Sample Metric* |
|---|---|---|
| Initiating a project (IP) | IP1 Planning quality | Requirement error rate |
| | IP2 Planning a project | Percentage resources devoted to planning and review of activities |
| | IP3 Refining the business case and risks | Percentage definitional uncertainty risk |

## Project Management Process Maturity Model (PM)$^2$ and Collaboration

The PM$^2$ model determines and positions an organization's relative project management level with other organizations (Kwak and Ibbs, 2002). There are a variety of project management process maturity models, and they are all based on work done by the Software Engineering Institute at Carnegie Mellon on improving the quality of the software development process.

The PM$^2$ model defines five steps, as shown in Figure 1.4.

Unfortunately, quite a good number of organizations are still hovering somewhere between the ad hoc and planned levels. Here, some very basic project management techniques are being utilized, usually limited to use of some project management tool (e.g., Microsoft Project). Even then, what and how things are done is usually subject to the whims of a particular project manager and is not often standardized across the company as a whole. Introduction of a PMO goes a long way toward moving up the ladder, particularly if performance measurement and management are thrown into the mix (level 4).

Companies that are serious about improving performance strive to achieve level 5, continuous learning. To do this requires a company to compare itself to others in its peer grouping, the goal of a model such as PM$^2$.

In the PM$^2$ model, key processes, organizational characteristics, and key focus areas are defined, as shown in Table 1.7. Each maturity level is associated with a set of key project management processes, characteristics of those processes, and key areas on which to focus. When mapped to the four balanced scorecard perspectives, PM$^2$ becomes a reference point or yardstick for PM best practices and processes.

Although the PM$^2$ model determines and positions an organization's relative project management level with other organizations, it is worthwhile to note that there has been a shift toward more decentralized and distributed project teams, with some teams going all virtual and many teams working in partnership with teams in other companies. Thus, measurement across collaborative distributed partners must be considered in any measurement program. Several interest groups and partnerships

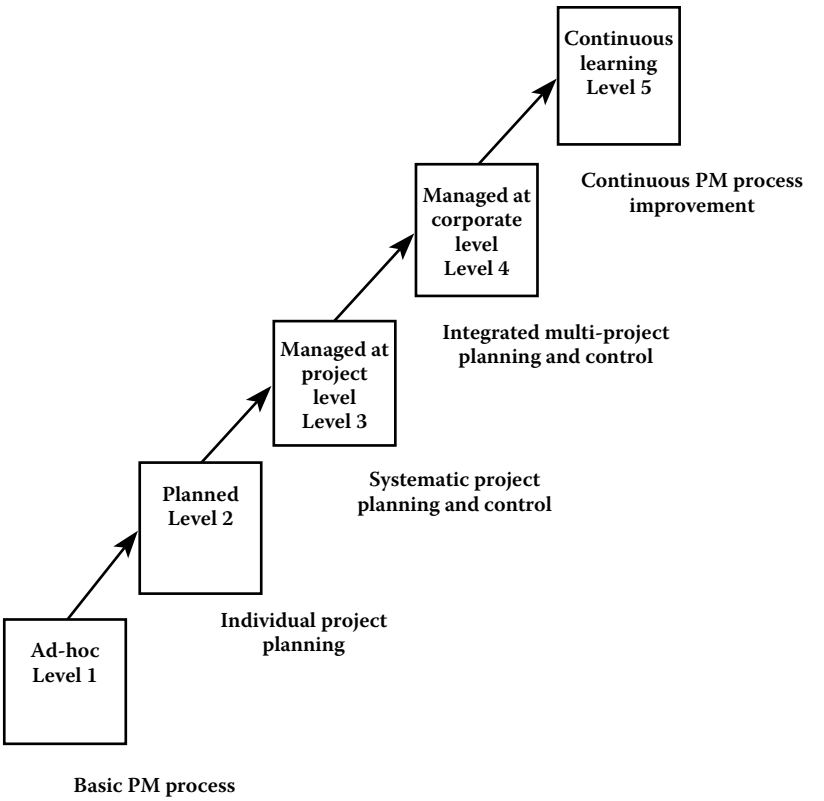


**Figure 1.4 The PM² model.**

in the automotive industry were formed to develop new project management methods and processes that worked effectively in a collaborative environment (Niebecker, Eager, and Kubitza, 2008). The German Organization for Project Management (GPM e.V.), the PMI automotive special interest group, the Automotive Industry Action Group (AIAG), and others have embarked on projects to develop methods, models, and frameworks for collaborative product development, data exchange, quality standards, and project management. One recent output from this effort was the ProSTEP-iViP reference model to manage time, tasks, and communications in cross-company automotive product development projects (http://www.prostep.org/en/).

A set of drivers and KPIs for a typical stand-alone project can be seen in Table 1.8.

Using guidelines from the ProSTEP reference model, Niebecker, Eager, and Kubitza (2008) have reoriented the drivers and KPIs in Table 1.8 to account for the extra levels of complexity found in a project worked on by two or more companies in a networked collaborative environment, as shown in Table 1.9.

**Table 1.7 Key Components of the PM2 Model**

| *Maturity Level* | *Key PM Processes* | *Major Organizational Characteristics* | *Key Focus Areas* |
|---|---|---|---|
| Level 5 (Continuous learning) | PM processes are continuously improved | Project-driven organization | Innovative ideas to improve PM processes and practices |
| | PM processes are fully understood | Dynamic, energetic, and fluid organization | |
| | PM data is optimized and sustained | Continuous improvement of PM processes and practices | |
| Level 4 (Managed at corporate level) | Multiple PM (program management) | Strong teamwork | Planning and controlling multiple projects in a professional manner |
| | PM data and processes are integrated | Formal PM training for project team | |
| | PM data is quantitatively analyzed, measured, and stored | | |
| Level 3 (Managed at project level) | Formal project planning and control systems are managed | Team oriented (medium) | Systematic and structured project planning and control for individual projects |
| | Formal PM data is managed | Informal training of PM skills and practices | |

*(continued)*

**Table 1.7 Key Components of the PM2 Model (Continued)**

| *Maturity Level* | *Key PM Processes* | *Major Organizational Characteristics* | *Key Focus Areas* |
|---|---|---|---|
| Level 2 (Planned) | Informal PM processes are defined | Team oriented (weak) | Individual project planning |
| | Informal PM problems are identified | Organizations possess strengths in doing similar work | |
| | Informal PM data is collected | | |
| Level 1 (Ad hoc) | No PM processes or practices are consistently available | Functionally isolated | Understand and establish basic PM processes |
| | No PM data is consistently collected or analyzed | Lack of senior management support | |
| | | Project success depends on individual efforts | |

Niebecker, Eager, and Kubitza's (2008) recommendations expand the traditional balanced scorecard methodology, providing an approach for monitoring and controlling cross-company projects by aligning collaborative project objectives with the business strategies and project portfolio of each company.

## We've Reached the End of Chapter 1

Projects operate in an environment much broader than the project itself. This means that the project manager needs to understand not only the intricacies of the particular project, but the greater organizational context in which its stakeholders exist. Project managers must identify and understand the needs of all the stakeholders (i.e., project team, management, end users, inter- and extra-company partners, etc.) while delivering a quality product on time and within budget. The only way to

**Table 1.8 Representative Drivers and KPIs for a Standard Project**

| *Balanced Scorecard Perspective* | *Drivers* | *KPIs* |
|---|---|---|
| Finances | Project budget<br>Increase of business value<br>Multiproject categorization<br>Project management | Human resources<br>Share of sales<br>Profit margin<br>Savings<br>ROI Expenditure |
| Customer | Customer satisfaction | Cost overrun<br>Number of customer audits<br>Change management<br>Process stability |
| Process | Adherence to schedules<br>Innovation enhancement<br>Minimizing risks<br>Optimization of project structure<br>Quality | Adherence to delivery dates<br>Lessons learned<br>Number of patent applications<br>External labor<br>Quality indices<br>Duration of change management<br>Product maturity<br>Percentage of overhead<br>Number of internal audits<br>Project risk analysis |
| Development | Employee satisfaction<br>Employee qualification enhancement | Rate of employee fluctuation<br>Travel costs<br>Overtime<br>Index of professional experience<br>Continuing education costs |

achieve this end is to standardize and measure the performance of the process of project management. One way to do this is through adoption of the project-based balanced scorecard.

**Table 1.9 Drivers and KPIs for a Collaborative Project (CP)**

| *Balanced Scorecard Perspective* | *Drivers* | *KPIs* |
|---|---|---|
| Finances/Project | Project cost<br>Increase of business value<br>Categorization into CP management<br>Project maturity | Product costs<br>Production costs<br>Cost overruns<br>Savings<br>Productivity index<br>Turnover<br>Risk distribution<br>Profit margin<br>Feature stability<br>Product maturity index |
| Process | Adherence to schedules<br>Innovation enhancement<br>Minimizing risks<br>Adherence to collaboration process<br>Quality | Variance to schedule<br>Changes before and after design freeze<br>Duration until defects removed<br>Number and duration of product changes<br>Number of postprocessing changes<br>Continuous improvement process<br>Project risk analysis<br>Maturity of collaboration process<br>Frequency of product tests<br>Defect frequency<br>Quality indices |

**Table 1.9 Drivers and KPIs for a Collaborative Project (CP) (Continued)**

| *Balanced Scorecard Perspective* | *Drivers* | *KPIs* |
|---|---|---|
| Collaboration | Communication<br>Collaboration | Number of team workshops<br>Checklists<br>Degree of communication efficiency<br>Collaborative lessons learned<br>Maturity of collaboration<br>Degree of lessons learned realization |
| Development | Team satisfaction<br>Team qualification enhancement<br>Trust between team members | Employee fluctuation<br>Project-focused continuing education<br>Employee qualification |

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