

# Financial and Organizational Impacts of Project Management

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## Introduction

The previous research on the benefits of PM is limited. Most of the study results were presented in qualitative and anecdotal fashion. Such benefits include improving organizational effectiveness, meeting quality standards, and fulfilling customer satisfaction (Al-Sedairy 1994; Boznak 1988; Bu-Bushait 1989; CII 1990; Deutsch 1991; Gross 1990; Ziomek 1984). This research was, however, very general and largely unsubstantiated. In other words, it was not very supportive to managers trying to answer fundamental and challenging questions regarding PM needs, advantages, and particularly *quantitative* benefits.

The goal of this research is to investigate the financial and organizational benefits to organizations that result from the implementation of PM tools, practices, and processes. This study will enable managers to determine when and how to apply PM by analyzing the quantitative relationships and benefits of PM processes. Such information and analysis

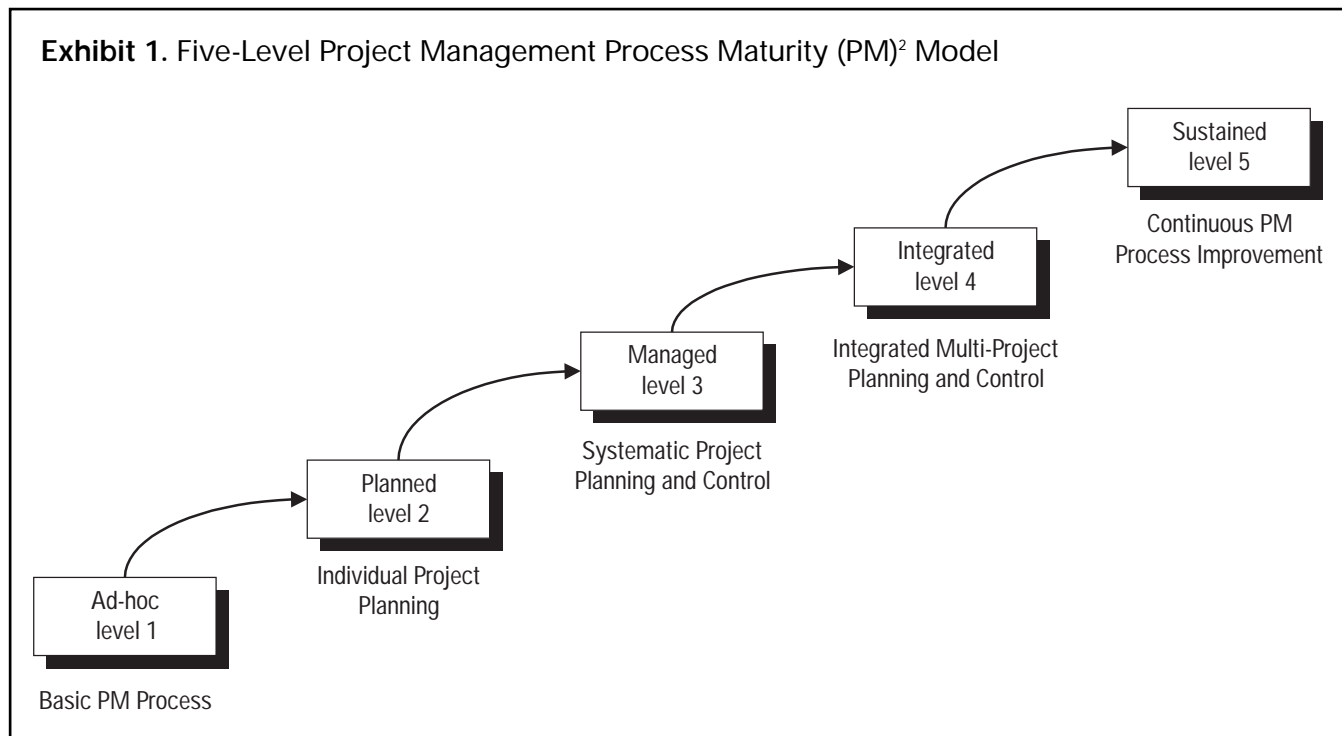
will help managers better understand and respond to queries from top managers about the cost effectiveness of PM.

## Research Steps

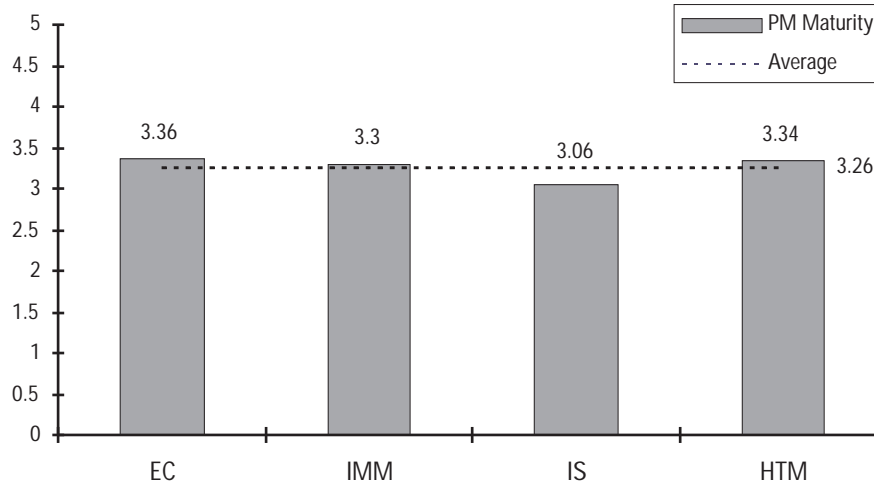
The following are the research steps that are used for this study.

1. Examine past and current study related to PM and find potential areas for in-depth research.
2. Develop a five-level PM Process Maturity (PM)<sup>2</sup> Model to position and compare an organization's current PM level.
3. Develop a comprehensive PM maturity benchmarking methodology to evaluate an organization's current PM level and actual project performance.
4. Select target organizations/industries to benchmark.

**Exhibit 1.** Five-Level Project Management Process Maturity (PM)<sup>2</sup> Model



**Exhibit 2. Overall PM Maturity**



5. Measure an organization's PM maturity level and actual project performance with three-part (PM)2 benchmarking questionnaire.
6. Break down collected information to evaluate and benchmark an organization's PM processes and practices level using specific criteria.
7. Identify an organization's strengths and weaknesses of PM practices and processes.
8. Find the relationship by correlating an organization's PM level and actual project cost and schedule performance.
9. Provide suggestions and recommendations for PM maturity improvement.

### Five-Level Project Management Process Maturity (PM)2 Model

The five-level PM Process Maturity (PM)2 Model is developed by adapting Crosby's maturity model (Crosby 1979), SEI's capability maturity model (SEI 1993), McCauley's organizational maturity model (McCauley 1993), and Microframe's PM maturity model (Microframe 1997) as basic references. Exhibit 1 presents the conceptual model of five-level PM Process Maturity (PM)2 Model.

This five-level (PM)2 model illustrates a series of steps to help an organization incrementally improve the organization's overall PM effectiveness. The objective is to use this model as a basis to locate and position an organization's current PM maturity level. This model also motivates organizations and people to accomplish higher and

more sophisticated PM maturity by a systematic and incremental approach.

### Organization's General Information Related to PM Practices

#### Organizational Demographics

Thirty-eight companies from four different industries and application areas have participated in this study: fifteen companies from engineering and construction (EC), ten companies from information management and movement (IMM, a.k.a. telecommunications), ten companies from information systems (IS, a.k.a. software development), and three companies from hi-tech manufacturing (HTM). Both private sectors and public sectors were examined.

#### Number of Years in PM Practices

Number of years in PM practices answers ranged from one to fifty years, with averages of 15.4 years for EC, 10.7 years for HTM, eight years for IS, and 6.8 years for IMM. The average was 10.7 years. Sixty-one percent of the organizations had less than ten years of experience with PM.

#### Annual Cost of PM Services

Annual cost of PM services were computed as a percentage of a company's or department's revenues or sales if that organization was entirely projectized. The average cost of PM services as a percentage of PM spending was 6 percent. Eighty percent of the companies answered that they spend less than 10 percent of total project cost on project management.

**Exhibit 3. Results of 8 PM Knowledge areas PM Maturity**

PM Knowledge Areas	EC	IMM	IS	HTM	All 38 Companies
Scope	3.52	3.45	3.25	3.37	3.42
Time	3.55	3.41	3.03	3.50	3.37
Cost	3.74	3.22	3.20	3.97	3.48
Quality	2.91	3.22	2.88	3.26	3.06
Human Resources	3.18	3.20	2.93	3.18	3.12
Communications	3.53	3.53	3.21	3.48	3.44
Risk	2.93	2.87	2.75	2.76	2.85
Procurement	3.33	3.01	2.91	3.33	3.14
Overall PM Knowledge Areas Maturity	3.34	3.24	3.02	3.36	3.24

**Exhibit 4. Results of 6 PM Processes PM Maturity**

PM Processes	E-C	IMM	IS	HTM	All 38 Companies
Initiating Maturity	3.25	3.34	3.57	3.60	3.39
Planning Maturity	3.61	3.49	3.43	3.55	3.53
Executing Maturity	3.31	3.27	2.90	3.32	3.19
Controlling Maturity	3.55	3.31	2.98	3.25	3.31
Closing Maturity	3.28	3.43	2.90	3.05	3.2
Project-driven Org. Environment Maturity	3.14	2.99	2.73	3.25	3.00
Overall PM Processes Maturity	3.36	3.31	3.09	3.34	3.28

**PM Maturity Assessment Results**

**Overall PM Maturity**

The overall PM maturity of the thirty-eight organizations ranged from a low of 3.06 for IS to a high of 3.36 for EC. The average overall PM maturity was 3.26. Since the rating scale ranged from one (lowest) to five (highest), there is still a substantial opportunity for improvement of PM practices for all four industries and application areas. Exhibit 2 compares overall PM maturity of four different industries and application areas.

**PM Knowledge Areas PM Maturity**

In accordance with *A Guide to the Project Management Body of Knowledge (PMBOK Guide)* from PMI (PMI 1996), we studied eight PM knowledge areas: scope, time, cost, quality, human resource, risk, communications, and procurement.

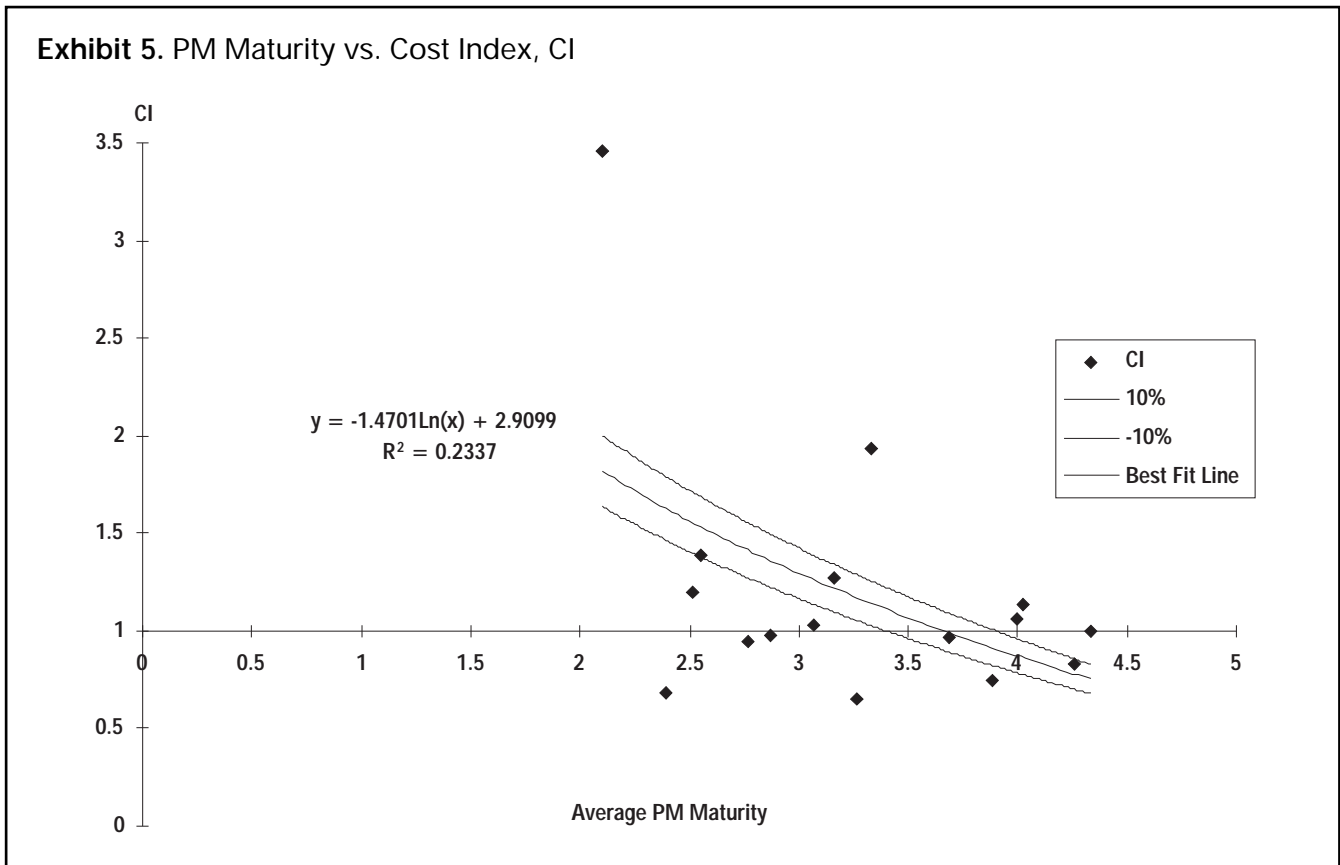
Exhibit 3 shows the benchmarking results for these PM knowledge areas. The result shows that all four industries are very concerned about cost management. Also, all organizations were weak on risk management area.

**PM Processes Maturity**

The study team proposes a generic PM lifecycle process to measure, compare, and benchmark different PM lifecycle phases accurately. In this study, PM processes are broken down into six different processes: initiating, planning, executing, controlling, closing, and project-driven organization environment. The area of project-driven organization environment was added to investigate the integration aspects and organizational issues of the other five PM processes.

Exhibit 4 shows the benchmarking results of six project lifecycle phases. IS had the lowest PM maturity rating, and EC and HTM had the highest.

**Exhibit 5. PM Maturity vs. Cost Index, CI**



**Relationship between PM Maturity and Actual Project Performance**

This paper also analyzes the relationship between organizations’ PM process maturity and actual project performance. Project performance is measured by the cost or schedule of the project. To evaluate an organization’s project performance, a cost index (CI) and a schedule index (SI) were developed as below. It is assumed that the estimation of CI and SI are accurate. Note that CI and SI are different from the *PMBOK Guide’s* cost performance index (CPI) and schedule performance index (SPI). In other words, the smaller the CI and SI, the better the project performance.

*Cost Index, CI=  $\frac{\text{Actual Project Cost}}{\text{Original Budget}}$*

*Schedule Index, SI=  $\frac{\text{Actual Project Duration}}{\text{Original Project Duration}}$*

Exhibit 5 portrays one example of the statistical relationship between overall PM maturity and the cost index. In this analysis, PM maturity is an independent variable and CI is the dependent variable. The heavier line is the best-fit regression equation, and the two lighter-colored lines are the +/- 10 percent control limits. The slope of the curve indicates that higher

levels of PM maturity are associated with better cost performance of the project, even considering the small sample size.

**Conclusions**

This research provides solid, comparative studies on PM processes and practices across industries and within an industry. The developed benchmarking tools assess organizations’ current level of PM strengths and weaknesses to further improve PM effectiveness. This benchmarking procedure quantitatively examines and benchmarks current PM processes and practices of thirty-eight different companies and government agencies in four different industries. This technique can be used for an indefinite period of time for continuous improvement of an organization’s PM maturity.

The results of the study show that even the best companies and industries have substantial room for improvement. Also, this analysis has shown that organizational PM maturity level and actual project performance were positively associated. This finding could be interpreted to encourage managers to pursue PM more actively.

This paper is a progress report for benchmarking an organization’s PM maturity and for developing an assessment

methodology to determine an organization's return on PM investment (PM/ROI). Future research will continue to report on quantitative results and findings by applying this research methodology. This benchmarking methodology and the resulting quantitative analyses will aid managers in making better PM investment decisions. Other articles in the future will continue this line of inquiry.

## Acknowledgments

We appreciate the support of the Project Management Institute (PMI) Educational Foundation and PMI/Northern California Chapter. We especially thank Dan Ono, Jim McFarlin, Bob Thompson, Ahmet Taspinar, Mike McCauley, Paul Nelson, Bill Ruggles, Cathy Tonne, and other PMI/NCC Study Team members. We also thank the thirty-eight companies that have participated in this study and provided much valuable information regarding project management practices and processes.

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