



# Application of Diamond Approach of Project Management

Chaitaly Mayank Mehta

Pro term lecturer Thakur College of Engineering and Technology, Kandivali, Mumbai, India

**Abstract—** A project is “a unique endeavour to produce a set of deliverables within clearly specified time, cost and quality constraints.” Many factors decide the success of a project like considering the time framework and budget of a project. Whereas on the other side the factors that lead to the failure of a project are lack of experience, ignorance towards work etc. Therefore to avoid the failure of a project efficient project management is required. The need for Diamond Framework is realized here and has been explained in the following study

**Keywords—** Ntcp model, diamond approach.

## I. INTRODUCTION

In addition, market globalization is forcing businesses to respond to local demands and to low-cost competition around the world. Moreover, the information technology (IT) and internet revolution is not slowing down. Even in stable industries such as banking and insurance, organizations must continuously invest in new IT infrastructure to keep up with growing demand and competition. Each of these trends intensifies the project activity in almost every organization and industry.

These projects took place in different industries, were aimed at different markets, and used different technologies. Yet they had one thing in common. They all had highly talented and dedicated managers, the best professional teams, the latest project management tools, and total support from top management. It seemed that each of these projects had every ingredient to succeed, but all of them failed to meet their expectations; when managers finally understood what went wrong and why, it was too late to fix the problem. The common theme to all these failures was that they executives as well as the project teams failed to appreciate up front the extent of uncertainty and complexity involved (or failed to communicate this extent to each other) and failed to adapt their management style to the situation.

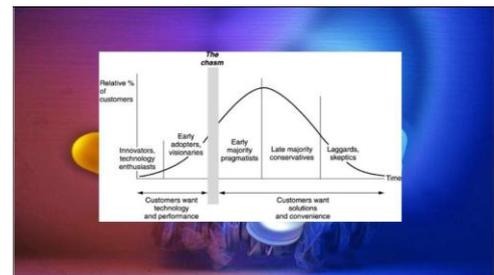


Fig1.1 The Evolution of Project Types Along the Project Life Cycle

This thesis considers strategic as well as the tactical aspects of project performance in the short term as well as the long term. To address differences among projects, a diamond-shaped framework is offered to help managers distinguish among projects according to four dimensions: novelty, technology, complexity, and pace. The diamond is designed to provide a disciplined tool for analyzing the expected benefits and risks of a project and developing a set of rules and behaviors for each project type. The diamond analysis is also helpful in assessing a project in midcourse, identifying possible gaps in a troubled project, and selecting corrective actions to put the project back on track.

### 1.1 THE DIAMOND NTCP MODEL

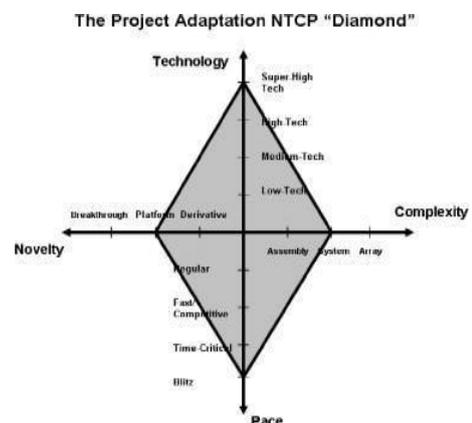


Fig.1.2 NTCP Diamond Model

The diamond NTCP model is a structured framework that

managers can use when making decisions about projects and how they should be run. Each dimension includes three to four levels along a spectrum in which a project might fall, as shown in figure.

#### 1.1.1 NOVELTY: HOW NEW IS THE PRODUCT TO THE MARKET.

Product novelty is defined by how new the product is to its markets and potential users. This dimension represents the extent to which customers are familiar with this kind of product, the way to use it, and that is, how clearly can you define the requirements and customer needs upfront. Product novelty includes three types: derivative, platform and breakthrough.

The levels of the novelty are defined as follows:

- a) Derivative products are extensions and improvements of existing products.
- b) Platforms products are new generations of existing product lines. Such product replaces previous products in a well-established market sectors. A typical example is a new model of car.
- c) Breakthrough products are new-to-world products. They transfer a new concept or a new idea into a new product that customers have never seen before.

#### 1.1.2 TECHNOLOGY: TECHNOLOGICAL UNCERTAINTY

The major sources of task uncertainty are technological uncertainty. Technological uncertainty has an impact on, among other things, design and testing, communication and interaction, the timing of design freeze, and the needed number of design cycles. It also affects the technical competence needed by the project manager and project members. Four levels comprise technological uncertainty:

- a) Low tech projects: rely on existing and well established technologies. The most typical examples are construction projects.
- b) Medium tech projects use mainly existing or base technologies but incorporate a new technology or a new feature that did not exist in previous projects.
- c) High tech projects: represents situations in which most of the technologies employed are new to the firm.

Super high- tech projects: are based on new technologies that do not exist at project initiation.

#### 1.1.3 COMPLEXITY: THE COMPLEXITY OF A PROJECT

Simple way to define various levels of complexity is to

use hierarchical framework systems. Project complexity is directly related to system scope and affects project and the formality of project management.

Three typical levels of complexity are used to distinguish among project management practices: assembly, system and array.

- a) Assembly projects: involve creating a collection of elements, components and modules combined into a single unit or entity that performs a single function.
- b) System projects involve a complex collection of interactive elements and subsystems, jointly performing multiple functions to meet a specific operation need.
- c) Array projects deal with a large widely dispersed collection of systems that function together to achieve a common purpose (sometimes they are called “systems of systems” or “super systems”).

#### 1.1.4 PACE: HOW CRITICAL IS THE TIME FRAME

On this scale, projects differ by urgency (how much time is available) and by what happens four levels of pace identified are: regular, fast/competitive, time critical and blitz.

- a) Regular projects are those efforts where time is not critical to immediate organizational success.
- b) Fast/ Competitive projects are the most common projects carried out by industries and profit-driven organizations.
- c) Conceived to address market opportunities, create a strategic positioning, or form new business lines.
- d) Time critical projects must be completed by a specific date, which is constrained by a definite event or a window of opportunities. Missing the deadline means project failure.
- e) Blitz projects. These are crisis projects. Solving the crisis as fast as possible is the criterion for success. The objective was to build a context free frame work that would not depend on the industry or specific organization and would be universal enough to capture the wide spectrum of projects. In practice it was found helpful to expand this model, recognizing that there are really two major sources of uncertainty; market (or goal) uncertainty and technological (or task) uncertainty. Thus the NTCP (novelty, technology, complexity and pace) diamond model emerged.

#### f) 1.2 THE NEED OF DIAMOND APPROACH

The efforts to improve operational efficiency continued for decades with more recent concepts such as just in time,

lean manufacturing, reengineering, supply chain management and six sigma concept. The diamond NTCP model is a structured framework that managers can use when making decisions about projects and how they should be run. Diamond framework includes four dimensions namely:

- Novelty: how new is your product in the market
- Technology: technological uncertainty
- Complexity: the complexity of a project
- Pace: how critical is your time frame?

. The five variables that govern the success of a project are time, quality, cost, scope and risk. The Diamond Framework helps to distinguish amongst projects and identify risks and tackle them accordingly.

## II. OBJECTIVES OF DAIMOND FRAMEWORK APPROACH

Project teams often try to follow a well established set of guidelines that has become standard in the discipline of project management. Although the conventional project management body of knowledge forms a good foundation for basic training and initial learning, it may not suffice for addressing complex problems of today’s projects.

### 2.1 TOWARDS AN ADAPTIVE PROJECT MANAGEMENT APPROACH

The new approach is based on a success-focused, flexible and adaptive framework. According to the adaptive approach, projects are not just a collection of activities that need to be completed on time. Instead projects are business-related processes that must deliver business results.

Although this approach represents a shift in thinking it is inevitable if you want to meet today’s organizational challenges. While no framework can provide all the answers, I believe that every organization can significantly improve its business results and achieve more home runs from its projects if it applies the approach. Once adopted, the new model will affect the planning and execution of projects and will focus everyone’s attention on more than just meeting time and budget.

TABLE 2.1 FROM TRADITIONAL TO ADAPTIVE PROJECT MANAGEMENT

Approach	Traditional Approach	Adaptive Approach
Project goal	Projects are focused on meeting time and	Projects are business related initiatives and

	budget	meeting multiple criteria.
Project plan	Project management is an integrative leadership need to be managed to deliver the triple constraint	Project management is a process of activities that functions with a responsibility to achieve the business results
Planning	Plan once at project initiation	Plan at outset and re-plan when needed.
Managerial approach	Rigid, focused on initial plan	Flexible, changing, adaptive.
Project work	Predictable, certain, linear, simple	Unpredictable, uncertain, nonlinear, complex
Environment effect	Minimal, detached after the project is launched	Affects the project throughout its execution.
Project Control	Identify deviations from plan, and put things back on track	Identify changes in the environment end adjust the plans accordingly.
Distinction	All projects are the same	Projects differ
Management style	One size fits all	Adaptive approach, one size

### 2.2 PUTTING DIAMOND APPROACH TO WORK

How companies select projects and allocate resources become most organization manage more than one project, they cannot avoid dealing with the problems of project portfolio management. Unfortunately, portfolio management is one of the most controversial and problematic activities in almost every organization. I define portfolio management as the actions and decisions a company takes to select or reject projects to include in its collection of ongoing projects and to allocate the resources among projects in the most effective way.

Project selection then, is the first problem managers need to address. The situation illustrated in the following example-a company with which he worked-will likely sound familiar to many executives and project managers.

#### STEP 1: DIVIDE PROJECTS BASED ON BUSINESS GOALS AND CUSTOMER GROUPS

When assigning priorities to projects, the first consideration is business goals. The simplest and perhaps the most effective way is to categorize projects along two

dimensions: strategic versus operational projects and internal versus external projects.

Strategic projects are prime efforts made to create or sustain strategic positions in markets or businesses. These projects are initiated to maintain or enhance the company's competitive position, change the basis of competition, create new market or create new product lines. In sum, these projects are intended to create new muscles for the organization and are typically initiated with a long term perspective in mind. Strategic projects can also include internal efforts to build new infrastructure.

Operational projects relate to existing businesses. Operational projects are initiated to help the organization keep doing what it is doing. Such projects are initiated to improve and extend the lives of existing products, get more out of previous initiatives, improve existing production lines or maintain projects that simply keep the lights on.

External projects are those made for outside customers. They are actually customers with whom the company has a contract or customers who will buy the product in the free market.

Internal projects are those made for internal customers: people and groups within the organization that will be the users and beneficiaries of the project result. They might be internal departments other unit's staff functions and so on.

Combining the two dimensions creates a 2x2 matrix as shown in table 2.2.

**STEP 2: ALLOCATE RESOURCES AMONG THE CELLS**

The next step is to allocate the company's (or business unit's) resources to each group of projects based on the company's strategic goals and policy. The policy may depend on the expected benefits and value from each group, the timing of the decision, the environment, industry trends and the company's competitive position and life-cycle stage. It will also greatly depend on the company's competitive position and life-cycle stage. It will also greatly depend on the company's strategic plans. For example, if the company is growing, it will allocate a higher portion to the strategic-external cell; if it is consolidating and reducing costs, perhaps the internal-operational part will get a bigger share. If managers first allocate resources to groups, each project competes only with other projects in the same group.

**TABLE 2.2 THE GOAL- CUSTOMER MATRIX**

Customer-type	Operational project	Strategic project
External	Extending life of	New product

	an existing product, product improvement	introduction
Internal	Technology	utility or capital project, a research project.

**STEP 3: IDENTIFY YOUR OPERATIONAL AND STRATEGIC DIAMONDS**

Using the NTCP dimensions demonstrates the difference between operational and strategic projects. Operational projects are almost always derivatives whereas strategic projects are either platforms or breakthroughs. The technological uncertainty of operational projects is typically no higher than medium tech, whereas strategic projects can span the entire spectrum of technological uncertainty. However, operational projects can be urgent, requiring a blitz attitude; in contrast strategic projects, because of their greater novelty are rarely done during a crisis and thus they normally do not reach the level of blitz.

**STEP 4: USE THE DIAMOND MODEL TO SELECT INDIVIDUAL PROJECTS**

The size of the diamond represents risk and opportunity, and as each of its dimensions represents a different kind of risk and a different kind of opportunity. When making the final selection of individual projects, you can use the NTCP dimensions to assess specific risks and benefits.

Complexity is associated with the level of investment and thus potential gain or loss. But increased complexity is also associated with difficulties in coordination and proper integration. Technology provides an opportunity for better performance than in the past and gives you the ability to do new things; but it also bears the risk of technical failure. And pace provides the opportunity to gain a time-based advantage, as well as the risk of delays.

Table below summarizes the specific risk and benefits for each dimension of the NTCP model.

**TABLE 2.3 POTENTIAL RISKS AND OPPORTUNITIES**

Diamond Dimensions	Potential Benefits and Opportunity	Potential risk or difficulty
Novelty	Innovative ideas, new market, new customer	Mis assessing customer needs, missing market opportunity
Complexity	Scope of business based on size	Substantial losses, coordination and integral difficulty
Technology	Improved performance, uses of technology new	Technical failure, lack of technical skills

Pace	Timing advantage	Risk of delay, risk of error due to speed
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The final step in project selection is to make a cost-benefit analysis of projects within each group. The risks and benefits identified in each project are translated into expected monetary values to help make a rational decision within each cell. A typical assessment matrix shown below in the figure, where those projects in the high benefit/low risk group are approved immediately, and those in the low benefit/high risk area are rejected immediately. In this way, you are left with fewer projects for a more refined assessment based on critical resources, policy or specific internal needs. Once the right projects have been selected, one need to choose the right approach for managing each project.

### III. CONCLUSION

From the above studies it can be found that the traditional approach to project management is based on a predictable, fixed, relatively simple, and certain model. However, only few projects today are fixed, certain, or simple. Rather, they are unpredictable, changing, and involve a great deal of uncertainty and complexity. As a result of this the Diamond NTCP model was introduced to overcome these problems.

The diamond NTCP model being a structured framework helps managers distinguish amongst projects. The diamond is designed to provide a disciplined tool for analyzing the expected benefits and risks of a project. It helps the manager to make decisions about the projects and how they should be run. The four bases of the diamond, helps to find out the time taken to freeze the product requirements and to find the level of bureaucracy and formality needed to manage it. This when applied eases out the process for planning and implementation strategy.



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