

Advanced Project Management APM

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جامعة الجميع الذكية

تسعى لتكون الكيان الأول الذي يتبنى مبدأ المجتمع التعليمي
التعاوني ويقدم العلم مقابل العمل لتنمية وبناء المجتمعات.

PMG 506

Advanced Project Management (APM)



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Advanced Project Management

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Lecture 5



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PMG 506
The Project in the Organizational
Structure

Lecture 5

The Project in the Organizational Structure

PMG506 Advanced Project Management (APM)



Introduction:

Lecture 1: Projects in Contemporary Organizations



Project Initiation Phase

Project Initiation:

Lecture 2: Strategic Management and Project Selection

Lecture 3: The Project Manager

Lecture 4: Negotiation and the Management of Conflict

Lecture 5: The Project in the Organizational Structure



Project planning

Lecture 6: Project Activity Planning

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The Project in the Organizational Structure

A firm may organize by major subsidiaries at the top level; the subsidiaries organize by product groups; and the product groups organize into customer divisions. These, in turn, may be split into functional departments that are further broken down into production process sections, which are set up as three-shift operating units.

In the past decade or so, a new kind of organization structure has appeared in growing numbers—the project organization, “enterprise project management” also known as “managing organizations by projects,” the “project-oriented firm,” and other names. Such organizations have been described as applying “project management practices and tools across an enterprise”. A great many firms, both software and non-software firms alike, have now adopted a system whereby their traditional business is carried out in the traditional way, but anything that represents a change is carried out as a project.

The Project in the Organizational Structure

There are many reasons for the rapid growth of project-oriented organizations, but most of them can be subsumed in four general areas:

First, speed and market responsiveness have become absolute requirements for successful competition.

Second, the development of new products, processes, or services regularly requires inputs from diverse areas of specialized knowledge.

Third, the rapid expansion of technological possibilities in almost every area of enterprise tends to destabilize the structure of organizations.

Finally, majority of senior managers rarely feel much confidence in their understanding of and control over a great many of the activities going on in their organizations.



The Project in the Organizational Structure

5.1 THE PROJECT AS PART OF THE FUNCTIONAL ORGANIZATION

As one alternative for giving the project a “home,” we can make it a part of one of the functional divisions of the firm.

For functionally organized projects, the project is assigned to the functional unit that has the most interest in ensuring its success or can be most helpful in implementing it.

The major advantages are:

1. There is maximum flexibility in the use of staff.
2. Individual experts can be utilized by many different projects.
3. Specialists in the division can be grouped to share knowledge and experience.
4. The functional division also serves as a base of technological continuity when individuals choose to leave the project, and even the parent firm.
5. The functional division contains the normal path of advancement for individuals whose expertise is in the functional area.

The Project in the Organizational Structure

5.1 THE PROJECT AS PART OF THE FUNCTIONAL ORGANIZATION

The disadvantages are:

1. The client is not the focus of activity and concern.
2. The functional division tends to be oriented toward the activities particular to its function.
3. No individual is given full responsibility for the project.
4. Lack of coordinated effort tend to make response to client needs slow and arduous.
5. There is a tendency to suboptimize the project.
6. The motivation of people assigned to the project tends to be weak.
7. Organizational arrangement does not facilitate a holistic approach to the project.

The Project in the Organizational Structure

5.2 PURE PROJECT ORGANIZATION

The project is separated from the rest of the parent system. It becomes a self-contained unit with its own technical staff, its own administration, tied to the parent firm by the tenuous strands of periodic progress reports and oversight.

The advantages are:

1. The project manager has full line authority over the project.
2. All members of the project work force are directly responsible to the PM.
3. Shortened communication lines result in faster communications with fewer failures.
4. The pure project organization can maintain a more or less permanent cadre of experts who develop considerable skill in specific technologies.
5. The project team that has a strong and separate identity of its own tends to develop a high level of commitment from its members.
6. The ability to make swift decisions is greatly enhanced.
7. Unity of command exists.

The Project in the Organizational Structure

5.2 PURE PROJECT ORGANIZATION

8. Pure project organizations are structurally simple and flexible, which makes them relatively easy to understand and to implement.
9. The organizational structure tends to support a holistic approach to the project.

Disadvantages:

1. When the parent organization takes on several projects, it is common for each one to be fully staffed. This can lead to considerable duplication of effort in every area from clerical staff to the most sophisticated technological support units.
2. People with critical technical skills may be hired by the project when they are available rather than when they are needed and they tend to be maintained on the project longer than needed, “just in case.”

Disadvantages 1 and 2 combine to make this way of organizing projects very expensive.

3. Individuals engaged with projects develop considerable depth in the technology of the project, but they tend to fall behind in other areas of their technical expertise.

The Project in the Organizational Structure

5.2 PURE PROJECT ORGANIZATION

4. In the environment of the project, administrative corner cutting is common and easily justified as a response to the client or to technical exigency.
5. Team members form strong attachments to the project and to each other. A disease known as projectitis develops.
A strong we—they divisiveness grows, distorting the relationships between project team members and their counterparts in the parent organization.
6. Worry about “life after the project ends.”

The Project in the Organizational Structure

5.3 THE MATRIX ORGANIZATION

The matrix organization is a combination of the two “Project and Functional”. It is a pure project organization overlaid on the functional divisions of the parent firm.

Depending on which of the two extremes (functional or pure project) it most resembles.

The “project” or “strong” matrix most resembles the pure project organization. The “functional” or “weak” matrix most resembles the functional form of organization.

Finally, the “balanced” matrix lies in between the other two.

In practice, there is an almost infinite variety of organizational forms between the extremes, and the primary difference between these forms has to do with the relative power/decision authority of the project manager and the functional manager.

Housing the project in a functional organization was simply too constraining. Setting it up as a pure project was workable but expensive because of the need to duplicate expensive technical talent when more than one project was involved. The matrix organization, which allows the PM to draw temporarily on the technological expertise and assistance of all relevant functions, was a way out of the dilemma.



The Project in the Organizational Structure

5.3 THE MATRIX ORGANIZATION

The advantages are:

1. The point of emphasis, the PM.
2. The project has reasonable access to the entire reservoir of technology in all functional divisions.
3. There is less anxiety about what happens when the project is completed than is typical of the pure project organization.
4. Response to client needs is as rapid as in the pure project case, and the matrix organization is just as flexible.
5. Consistency with the policies, practices, and procedures of the parent firm tends to be preserved.
6. Allows a better companywide balance of resources to achieve the several different time/cost/performance targets of the individual projects.
7. There is a great deal of flexibility in how the project is organized so that it can be adapted to a wide variety of projects and is always subject to the needs, abilities, and desires of the parent organization.

The Project in the Organizational Structure

5.3 THE MATRIX ORGANIZATION

The disadvantages are:

1. When doubt exists about who is in charge, the work of the project suffers. If the project is successful and highly visible, doubt about who is in charge can foster political infighting for the credit and glory. If the project is a failure, political infighting will be even more brutal to avoid blame.
2. The movement of resources from project to another to satisfy the several schedules may foster political infighting among the several PMs, all of whom tend to be more interested in ensuring success for their individual projects than in helping the total system optimize organization wide goals.
3. The projects, having individual identities, resist death. Even in matrix organizations, projectitis is still a serious disease.
4. The ability of the PM to negotiate anything from resources to technical assistance to delivery dates is a key contributor to project success. Success is doubtful for a PM without strong negotiating skills

The Project in the Organizational Structure

5.3 THE MATRIX ORGANIZATION

The disadvantages are:

5. Matrix management “is a charming form of management, full of variety and disorder.”

Virtual Projects:

Virtual projects are those in which work on the project team crosses time, space, organizational, or cultural boundaries. Thus, a virtual team may work in different time periods, be geographically dispersed, work in different organizations, or work in different cultures. In all cases, the rise of virtual projects has been facilitated by the use of the Internet and other communication technologies.

Gratton (2007) offers some rules for success:

- Only use virtual teams for projects that are challenging and interesting. But also be sure the project is meaningful to the company as well as the team.
- Solicit volunteers as much as possible—they’ll be more enthusiastic and dedicated to the success of the project.

The Project in the Organizational Structure

5.3 THE MATRIX ORGANIZATION

- Include a few members in the team who already know each other, and make sure one in every six or seven are “boundary spanners” with lots of outside contacts.
- Create an online resource for team members to learn about each other (especially how they prefer to work), collaborate, brainstorm, and draw inspiration.
- Encourage frequent communication, but not social gatherings (which will occur at more natural times anyway).
- Divide the project work into geographically independent modules as much as possible so progress in one location isn’t hampered by delays in other locations.

The Project in the Organizational Structure

5.4 MIXED ORGANIZATIONAL SYSTEMS

Divisionalization is a means of dividing a large and monolithic organization into smaller, more flexible units. This enables the parent organization to capture some of the advantages of small, specialized organizational units while retaining some of the advantages that come with larger size.

Pure functional and pure project organizations may coexist in a firm. This results in the mixed form. This form is rarely observed with the purity we have depicted here, yet it is not uncommon. What is done, instead, is to spin off the large, successful longrun projects as subsidiaries or independent operations. Many firms nurture young, unstable, smaller projects under the wing of an existing division, then wean them to pure projects with their own identity, and finally allow the formation of a venture team—or, for a larger project, venture firm—within the parent company

The Project in the Organizational Structure

5.5 CHOOSING AN ORGANIZATIONAL FORM

The choice is determined by the situation, but even so is partly intuitive. There are few accepted principles of design, and no step-by-step procedures that give detailed instructions for determining what kind of structure is needed and how it can be built. All we can do is consider the nature of the potential project, the characteristics of the various organizational options, the advantages and disadvantages of each, the cultural preferences of the parent organization, and make the best compromise we can.

In general, the functional form is apt to be the organizational form of choice for projects where the major focus must be on the in-depth application of a technology rather than, for example, on minimizing cost, meeting a specific schedule, or achieving speedy response to change. Also, the functional form is preferred for projects that will require large capital investments in equipment or buildings of a type normally used by the function.

The Project in the Organizational Structure

5.5 CHOOSING AN ORGANIZATIONAL FORM

The criteria for the selection of a project organization:

1. Define the project with a statement of the objective(s) that identifies the major outcomes desired.
2. Determine the key tasks associated with each objective and locate the units in the parent organization that serve as functional “homes” for these types of tasks.
3. Arrange the key tasks by sequence and decompose them into work packages.
4. Determine which organizational units are required to carry out the work packages and which units will work particularly closely with which others.
5. List any special characteristics or assumptions associated with the project—for example, level of technology needed, probable length and size of the project, any potential problems with the individuals who may be assigned to the work, possible political problems between different functions involved, and anything else that seems relevant, including the parent firm’s previous experiences with different ways of organizing projects.
6. In light of the above, and with full cognizance of the pros and cons associated with each structural form, choose a structure.

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

Risk Management

Is “the systematic process of identifying, analyzing, and responding to project risk”

Consist of seven subprocesses:

1. *Risk Management Planning*—deciding how to approach and plan the risk management activities for a project.
2. *Risk Identification*—determining which risks might affect the project and documenting their characteristics.
3. *Qualitative Risk Analysis*—performing a qualitative analysis of risks and conditions to prioritize their impacts on project objectives.
4. *Quantitative Risk Analysis*—estimating the probability and consequences of risks and estimating the implications for project objectives.
5. *Risk Response Planning*—developing procedures and techniques to enhance opportunities and reduce threats to the project’s objectives.

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

Risk Management

6. *Risk Monitoring and Control*—monitoring residual risks, identifying new risks, executing risk reduction plans, and evaluating their effectiveness throughout the project life cycle.
7. *Create and Maintain a Risk Management Data Bank*—a permanent record of identified risks, methods used to mitigate or resolve them, and the results of all risk management activities.

The risk management system should maintain an up-to-date data bank that includes, but is not restricted to, the following:

- identification of all environments that may impact on the project
- identification of all assumptions made in the preliminary project plan that may be the source of risk for the project
- all risks identified by the risk management group, complete with their estimated impacts on the project and estimates of their probability of occurring

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

Risk Management

- a complete list of all “categories” and “key words” used to categorize risks, assumptions, and environments so that all risk management groups can access past work done on risk management
- the details of all qualitative and quantitative estimates made on risks, on states of the project’s environment, or on project assumptions, complete with a brief description of the methods used to make such estimates
- minutes of all group meetings including all actions the group developed to deal with or mitigate each specific risk, including the decision to ignore a risk
- the actual outcomes of estimated risks and the results of actions taken to mitigate risk

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

Risk Identification through Failure Mode and Effect Analysis (FMEA)

Is the application of a scoring model. It is easily applied to risk by using six steps:

1. List possible ways a project might fail.
2. Evaluate the severity (S) of the consequences of each type of failure on a 10-point scale where “1” is “no effect” and “10” is “very severe.”
3. For each cause of failure, estimate the likelihood (L) of its occurrence on a 10-point scale where “1” is “remote” and 10 is “almost certain.”
4. Estimate the ability to detect (D) a failure associated with each cause. Using a 10 point scale, “1” means detectability is almost certain using normal monitoring/control systems and “10” means it is practically certain that failure will not be detected in time to avoid or mitigate it.
5. Find the Risk Priority Number (RPN) where **$RPN = S \times L \times D$** .
6. Consider ways to reduce the S, L, and D for each cause of failure with a significantly high RPN

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

The Project Management Office

There are a variety of forms of PMOs to serve a variety of needs. Some of these are at a low level in the organization and others report to the highest levels. The best PMOs have some common characteristics, including the traits of being run like the best businesses (a business plan, focused, emphasis on results), enjoying strong executive support, being future-oriented learning organizations, and offering the best project leadership in the organization.

Purposes of the Project Management Office

- Establish project administration procedures for selecting, initializing and planning, budgeting, and scheduling projects as well as to serve as a repository for reports on the performance of the planning, budgeting, scheduling, and resource allocation processes.
- Established and maintained standard project processes (practices and procedures), offered consulting help on projects, training and mentoring services, performed project tracking and portfolio management. Maintained a stable of project managers

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

- Ensuring that the firm's portfolio of projects supports the organization's overall goals and strategy. Assimilation of good project management practice into the entire organization.

Note in the above that the role of the PMO is that of an enabler/facilitator of projects, not the doer of projects.

Tasks of the Project Management Office

- Establish and enforce good project management processes such as procedures for bidding, risk analysis, project selection, progress reports, executing contracts, and selecting software
- Assess and improve the organization's project management maturity
- Develop and improve an enterprise project management system

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

- Offer training in project management and help project managers become certified
- Identify, develop, and mentor project managers and maintain a stable of competent candidates
- Offer consulting services to the organization's project managers
- Help project managers with administrative details such as status reports
- Establish a process for estimation and evaluation of risk
- Determine if a new project is a good “fit” for the changing organization
- Identify downstream changes (market, organization) and their impacts on current projects: Are the projects still relevant? Is there a need to change any project's scope? Are there any cost effects on the projects?
- Review and manage the organization's project risk portfolio, including limiting the number of active projects at any given time and identifying and reining in runaway projects as well as managing potential disasters

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

- Conduct project reviews and audits, particularly early in each project's life cycle, and report project progress relative to the organization's goals
- Maintain and store project archives
- Establish a project resource database and manage the resource pool
- Serve as a champion to pursue project management excellence in the organization and encourage discussion on the value of individual projects in the firm
- Serve as a “home” for project managers to communicate with each other and with PMO staff
- Collect and disseminate information and techniques reported in project evaluations that can improve project management practices
- Assist in project termination

The Project in the Organizational Structure

5.6 TWO SPECIAL CASES—RISK MANAGEMENT AND THE PROJECT OFFICE

Forms of Project Management Office

L1 PMO that represents an information center, reporting on project progress and assessing the organization's project maturity

L2 PMO may establish project management procedures and practices, promulgate lessons learned from prior projects, create a database for risk analysis, help project managers with administrative and managerial matters, and possibly even offer basic training in project management

L3 PMO may establish a resource database and monitor interproject dependencies, manage the project portfolio to ensure attainment of the organization's goals, audit and prioritize individual projects, and generally establish an enterprise project management system.

The Project in the Organizational Structure

5.7 THE PROJECT TEAM

In addition to the PM, the following key team members might be needed, plus an appropriate number of systems architects, engineers, testers, clerks, and the like.

- *Systems Architect* is in charge of the basic product design and development and is responsible for functional analysis, specifications, drawings, cost estimates, and documentation.
- *Development Engineer* his task is the efficient production of the product or process the project engineer has designed, including responsibility for manufacturing engineering, design and production of code, unit testing, production scheduling, and other production tasks.
- *Test Engineer* is responsible for the installation, testing, and support of the product (process) once its engineering is complete.

Contract Administrator is in charge of all official paperwork, keeping track of standards compliance, customer changes, billings, questions, complaints, legal aspects, costs, and negotiation of other matters related to the contract authorizing the project.



The Project in the Organizational Structure

5.7 THE PROJECT TEAM

- *Project Controller* keeps daily account of budgets, cost variances, labor charges, project supplies, capital equipment status, etc. Makes regular reports and keeps in close touch with both the PM and the company controller.
- *Support Services Manager* is in charge of product support, subcontractors, data processing, purchasing, contract negotiation, and general management support functions.

Of these top project people, it is most important that the systems architect and the project controller report directly to the PM. This facilitates control over two of the main goals of the project: technical performance and budget.

The Project in the Organizational Structure

5.8 HUMAN FACTORS AND THE PROJECT TEAM

Meeting schedule and cost goals without compromising performance appears to be a technical problem for the PM.

Motivating project team members to accomplish the work of the project.

The use of participative management is also a way of motivating people:

- Management By Objectives (MBO)

- Six Sigma

- Employee Involvement (EI)

- Total Quality Management (TQM)

- Continuous Improvement Teams (CIT)

- self-directed teams (SDT)

- self-managed teams (SMT)



The Project in the Organizational Structure

SUMMARY

This chapter described the various organizational structures that can be used for projects, and detailed their advantages. An appropriate procedure for choosing the best form was described and two examples were given. The chapter then moved into a discussion of risk management and the role of the Project Management Office. Following this, discussion turned to the project team itself, describing the organization of the project office staff and the human issues, such as motivation and conflict, the project manager will face.

Specific points made in the chapter were these: If the project is to be included in a functional organization, it should be placed in that unit with the greatest interest in its success or the unit that can provide the most help. Though there are advantages in this mode of organizing, the disadvantages are greater.

The project form of organizing has its advantages and disadvantages. Though the disadvantages are not as severe as with the functional form, they are nevertheless significant.

The Project in the Organizational Structure

SUMMARY

The matrix organization combines the functional and project forms in an attempt to reap the advantages of each. While this approach has been fairly successful, it also has its own unique disadvantages. There are many variants of the pure forms of organization, and special hybrids are commonly used to handle special projects. The best form for a particular case requires consideration of the characteristics of the project compared with the various advantages and disadvantages of each form.

A useful procedure for selecting an organizational form for a project is:

1. Identify the specific outcomes desired.
2. Determine the key tasks to attain these outcomes and identify the units within the parent organization where these tasks would normally be assigned.
3. Sequence the key tasks and group them into logical work steps.
4. Determine which project subsystems will be assigned which steps and which subsystems must closely cooperate.

The Project in the Organizational Structure

SUMMARY

5. Identify any special firm or project characteristics, constraints, or problems that may affect how the project should be organized.
6. Consider all the above relative to the pros and cons of each organizational form as a final decision is made.

Every project should have a project office, even if it must be shared with another project. Larger, more complex projects may include, in addition to the PM, a project engineer, manufacturing engineer, field manager, contract administrator, project controller, and support service manager. If an organization engages in multiple projects, a Project Management Office may also be warranted.

Those on the project team who should report directly to the PM are the project engineer and project controller as well as:

1. Senior team members who will have a long-term relationship with the project.
2. Those with whom the PM will be continuously or closely communicating.
3. Those with rare skills needed for project success.

The Project in the Organizational Structure

SUMMARY

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The Project in the Organizational Structure

SUMMARY

Perfectionism, motivation, and conflict are often the major behavioral problems facing the PM. Management by Objectives (MBO) can be a useful tool for addressing the first two, while gentle confrontation usually works best for the latter.

Sources of project conflict are often priorities and policies at first, schedule and technical problems during the main phase, and schedule and personal issues near termination.

The Project in the Organizational Structure

GLOSSARY

Action Plan A detailed plan of what needs to be done and when (see Chapter 6 for more discussion and some examples).

Concurrent/Simultaneous Engineering Originally, the use of a design team that included both design and manufacturing engineers, now expanded to include staff from quality control, purchasing, and other relevant areas.

Functional Management The standard departments of the organization that represent individual disciplines such as engineering, marketing, purchasing, and so on.

Holistic The whole viewed at one time rather than each piece individually.

Management by Objectives (MBO) A management approach popular during the 1960s that encouraged managers to give their subordinates more freedom in determining how to achieve task objectives.

Matrix Organization A method of organizing that maintains both functional supervisors as well as project supervisors. A strong matrix operates closer to a pure project organization while a weak matrix operates more like a functional organization.

Mixed Organization This approach includes both functions (disciplines) and projects in its hierarchy.



The Project in the Organizational Structure

GLOSSARY

Parent Organization The firm or organization within which the project is being conducted.

Program Manager This person is typically responsible for a number of related projects, each with its own project manager.

Project Management Office An office to deal with multiple projects and charged with improving the project management maturity and expertise of the organization, as well as increasing the success rate of projects.

Projectitis A social phenomenon, inappropriately intense loyalty to the project.

Subcontract Subletting tasks out to smaller contractors.

Suboptimization The optimization of a subelement of a system, perhaps to the detriment of the overall system.

War Room A project office where the latest detail on project progress is available. It may also be a source of technical assistance in managing the project.

Work Breakdown Structure A basic project document that describes all the work that must be done to complete the project and forms the basis for costing, scheduling, and work responsibility



Lecture 5

The Project in the Organizational Structure

Thank you

