

# CAPM Chapter 2: The Environment in Which Projects Operate



*Figure 2.1. A construction project underway (Gomez, 2017).*

## 2.1. Overview

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Amy Lawson is the project manager for the Pape Professional Building construction project. She is responsible for the successful completion of the project for QWE, the property development company that is carrying out the project. Amy's work on the project will be conducted as part of the overall activities of QWE which will influence how she manages the project. Amy is aware that the project will have many stakeholders, including local residents and businesses. The project's governance structure, which will provide direction to Amy and consider major project decisions will be through the QWE management team.

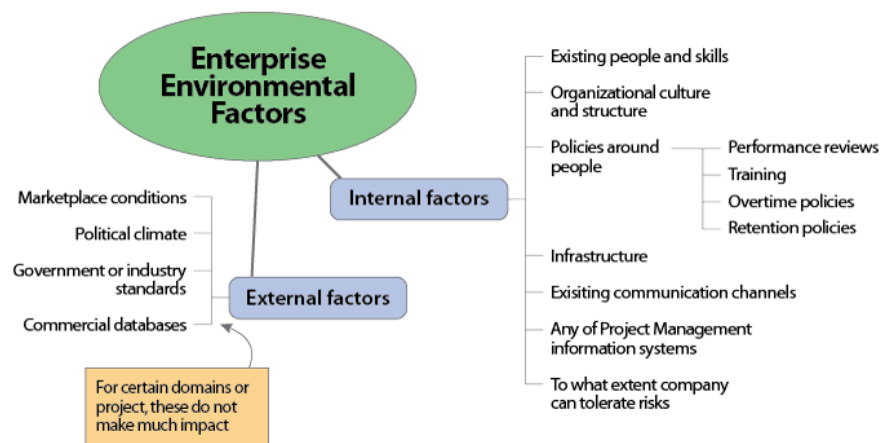
The project team, who will carry out and manage much of the project work, will report to Amy and she will manage them carefully. She will consider the roles that each project team member will play and the structure of the team itself so that it can operate effectively. Amy will consider the organization of the work in the project, taking these elements into account and deciding which activities will feature in each project phase and how these activities will affect each other within the Project Life Cycle.

Chapter 2 of the PMBOK considers these aspects of the management of a project - how organizational and other influences impact a project. Enterprise Environmental Factors exist outside of the project environment, often outside of the organization in which the project is taking place and may influence the

conduct of the project. Organizational Process Assets come from the organization in which the project is taking place and may be valuable resources in the conduct of the project. The nature of the organizational system will influence the way that people behave in the project and in the organization. These elements are considered in this chapter.

## 2.2. Enterprise Environmental Factors

Enterprise Environmental Factors are frequently referred to in the PMBOK. These are factors that exist in the environment in which the project is being conducted, either inside the organization or outside it, which may influence the project activity and which the project team and the project manager have no control over. These factors need to be taken into account in the project planning and can both positively and negatively impact the project.



**Figure 2.2. Examples of Enterprise Environmental Factors. © University of Waterloo.**

### 2.2.1. EEFs Internal to the Organization

Possible internal EEFs include: the organizational culture and norms, geographic distribution of facilities and the skills of employees. The information system that is used for the project may also be an enterprise environmental factor.

### 2.2.2. EEFs External to the Organization

There are a wide range of possible external Enterprise Environmental Factors. These include the political and economic conditions, legal requirements, academic research, etc.

In the QWE project EEFs include: municipal building regulations will influence the building design; local infrastructure, such as water and electricity supplies, will influence the design and how the project will be conducted; plan approval procedures of the client and the local municipal authorities will influence project activity. These are examples of Enterprise Environmental Factors.

## 2.3. Organizational Process Assets

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Most projects take place within an organizational context. They may be wholly within one organization (such as an update to a computer system in one company) or may involve multiple organizations (such as a construction project involving clients, construction companies, architects, etc.). These organizations will usually have assets that can be used in the project. These can include a wide range of things including previous project plans, organizational planning documents, processes for recruitment, purchasing and other things and knowledge that will be useful to the project. These are referred to as Organizational Process Assets and appear frequently as Inputs to processes in the PMBOK. They are divided into two categories:

### 2.3.1. Processes, Policies, and Procedures

The organization's processes, policies, and procedures are not usually changed by the work that is done on the project. These might include the processes that are used for recruiting project team members, for managing the financial aspects of the project or sourcing suppliers of project materials and services. It may also include standard forms, contracts and project processes that are used in all organization projects. The organization's processes, policies and procedures may contribute in any of the five project Process Groups (Initiating, Planning, Executing, Monitoring and Controlling and Closing).

### 2.3.2. Organizational Knowledge Repositories

The project itself may contribute to the Organizational Process Assets too, contributing to the Organizational Knowledge Repositories. The project activity may develop new documentation (such as project plans), understanding of the project results, new procedures and policies that may be usable by the organization and contribute to the assets of the organization in other ways.

In the QWE project, construction project knowledge will be developed that will be usable in projects that QWE conduct in the future. The Pape Professional Building project will benefit from the knowledge that QWE has of projects that it has conducted in the past. This might include previous project plans and policies and procedures which may be applied or modified for use in the current project.

The PMBOK refers to organizational process assets in two categories, Processes and Procedures and Corporate Knowledge Base. The Corporate Knowledge Base refers to the all of the knowledge that an organization may have which can include financial, technical, market, process and historical information.

## 2.4. Organizational Systems

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### 2.4.1. Overview

Projects take place within the organization's structure and governance framework and the project manager needs to understand how these can impact their project management activity. Many factors interact within an organization that together create a system that is unique to that organization. Within this system people have different powers, interests and skills that influence how they behave and the impact that they can have on the project.

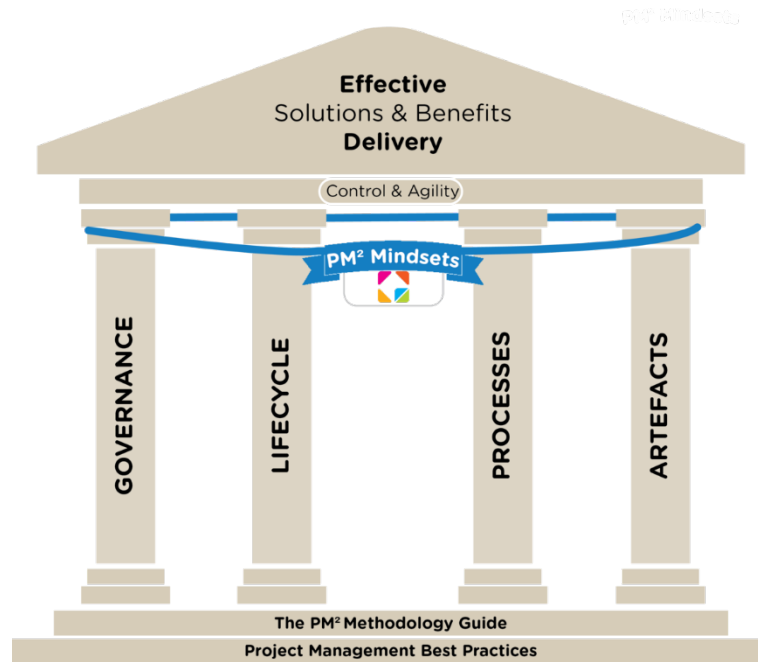
Other disciplines study how these factors interact and the practices that are used to manage projects effectively within them. PMBOK provides an introduction to this field and basic guidance. It describes organizational systems (combinations of factors that interact and create results). These systems determine the culture of the organization and what it can achieve.

Systems change over time and can have varying levels of performance, both for the system as a whole, and the elements within it. Higher performance can be achieved with good management while poor performance is possible if they are managed badly. Systems are complex - they will not respond proportionately to changes in stimuli. The impact of changes within the system and from outside it will depend on the relationships between the components within it.

Management in the organization tries to optimise the performance of the organizational system and the components within it and this will influence the success of project management activity. Organizational managers will consider the impact that project activity will have on the organization and project managers need to consider this as they focus on achieving the project objectives.

In the Pape Professional Building project, getting the building open and gaining rental income from tenants is a key objective of the QWE organization. Although the project has fallen behind, Amy has identified that an early completion of the drywall work means that the painters can start earlier and result in an earlier completion of the project as a whole, increasing the likelihood that income from tenants will be able to start on time. However, this will require paying more for the painters because of the change to their scheduled work time. Amy will receive support from QWE for this change because it achieves their organizational objective (tenant income on time).

The project manager will also consider the governance framework of the organization.



**Figure 2.3. Project management best practices lay the foundation for successful projects and effective delivery (Nkouroun, 2017).**

### 2.4.2. Organizational Governance Frameworks

The governance of the organization is the elements that are intended to influence the behaviour of the people within the organizational system. It includes the jobs that people do, the structure that is used to organize their relationships with each other and how people are directed and communicated with.

The framework of governance is how authority appears in the organization. It includes the rules, policies, procedures and norms that govern people's activity as well as the relationships, systems and processes that they work within. This is the governance framework which will determine many aspects of organizational activity including its objectives, the risks it will take and the performance that it will achieve.

The PMI provides an approach to project and program governance in their document "Governance of Portfolios, Programs, and Projects: A Practice Guide". It describes the main elements of a governance framework that can be used to manage projects effectively.

### 2.4.3. Management Elements

The governance framework of the organization and the type of organizational structure that it uses (see the next section) has various management elements within it. These elements include how job roles are defined (who does what), the levels of authority that each person has, how command and direction are organized, systems of payment for work done, organizational communications, work materials logistics, how people are treated, workplace safety and morale.

## 2.4.4. Organizational Structure Types

In the Pape Professional Building, the project will be influenced by the culture, style and structure of QWE and by the various organizations that will work on the project, including the design/architecture firm and the construction contractors. QWE is an organization that frequently manages professional building construction projects and so have a lot of knowledge and resources that Amy will be able to use. The reporting processes that Amy will use to report her progress to the QWE management team have been established over many years of past projects.

PMBOK discusses how different organizational structures will affect a project. The organization structure that is used by an organization can depend on many factors including the organizational objectives, costs, how people will be managed (authority, responsibility, communications), people's physical location, etc.

Some organizations have a simple or organic structure where people work together with little authority over each other. Usually small, project managers here have little authority. Some, more formal, organizations rarely conduct projects and are mainly operationally focused. Most of their efforts are directed towards the product or service that they deliver on a daily basis. Larger, functionally organized structures may also exist in multi-divisional organizations. Functional managers tend to have substantially more power and resources than project managers in these structures.

Others are mostly project focused, and their main activity is conducting projects and their resources are mostly focused on this. A manufacturing company will usually be more operationally focused, or functional and a construction company will usually be more project oriented. Virtual organizational structures are now also common with various levels of authority for project managers.

Between functional and project oriented (or projectized) organizations are also organizations that use elements of both, known as Matrix organizational structures. Matrix structures that are more functionally oriented are known as Weak Matrix, those that are more projectized are known as Strong Matrix, while those in the middle are known as Balanced Matrix.

The different structures vary in the power and resources that the project manager has and influence how they will do their job. In a functional organization, the project team will often be people who normally report to a functional manager and who the project manager has less ability to direct their actions. In a project oriented structure the project manager will have significantly more power, with the project team mainly reporting to them. In this structure the project manager will typically have access to more resources, usually with full time administrative support.

Most organizational structures have elements of more than one of the organizational structure types that are described above. These are known as hybrid structures, because they combine different structures. Project managers need to consider the type of structure that they are working in, the power that they have to influence project team member activity and the resources that are available to them, in order to manage the project effectively.

Many organizations have established Project Management Offices to support the project activity that takes place inside the organization. Usually the PMO will manage the standardization of how projects are



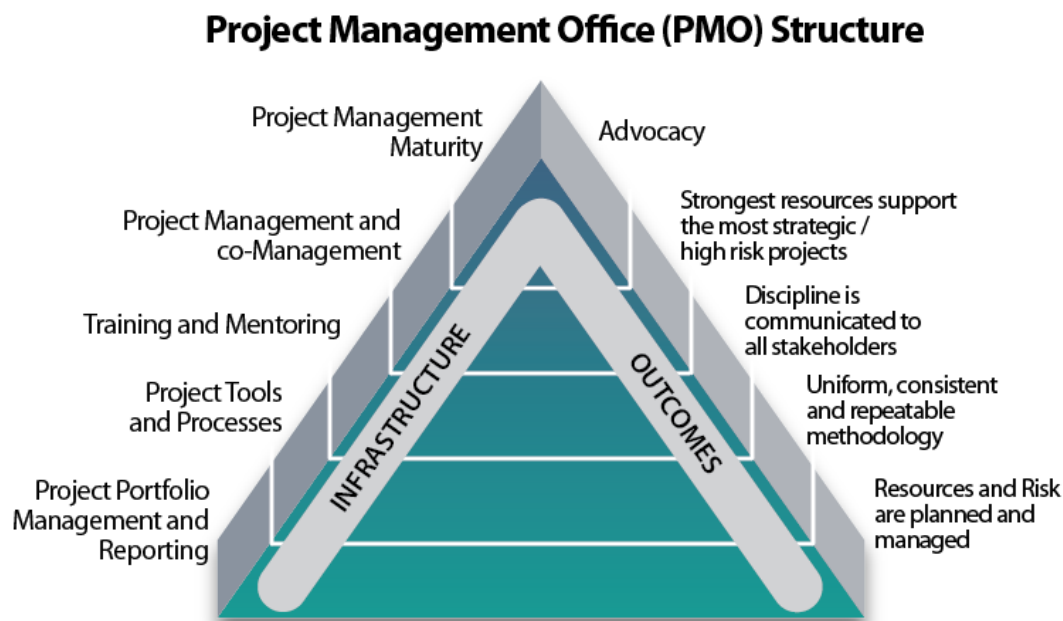
managed in the organization and provide resources to projects to help them do their work, including project methodologies, tools and techniques.

PMO's have varying responsibilities and varying levels of authority in different organizations. Some play a largely supportive role while others exercise more control through requiring adherence to specific project management processes and tools. Others are more directive, taking a direct role in managing the projects themselves.

The PMO will usually monitor the performance of projects, assessing their contribution to strategic objectives of the organization and providing reports for the organization's decision making structures. The PMO may have the authority and responsibility to intervene in projects to make their alignment with strategic objectives more effective. Some have the authority to terminate projects if required.

The project manager is responsible for managing an individual project. The PMO is focused on the portfolio of projects that the organization is undertaking, providing resources, support and management to align them with the organization's strategic goals.

In QWE, the structure is project oriented. The organization's main activity is construction projects and the project team members report to Amy.



**Figure 2.4. Project Management Office (PMO) Structure. © University of Waterloo.**

## References

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Gomez, R. A. (2017, June 15). Construction textures. Retrieved March 23, 2018, from <https://unsplash.com/photos/0eoHDfSqfik>

Nkouroun. (2017, February 28). The House of PM2. Retrieved March 26, 2018, from <https://commons.wikimedia.org/wiki/File:House-of-PM2.png> and licensed under CC BY-SA 4.0.



## Test Your Knowledge — CAPM Content Chapter 2 Questions

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1. Which of the following is not a type of control and influence used by a project management office:
  - A. Supportive
  - B. Directive
  - C. Suggestive
  - D. Controlling
  
2. Which of the following is not an example of an organization's internal enterprise environmental factors:
  - A. Infrastructure
  - B. Organizational culture, structure, and governance
  - C. The offices that are used by the PMO
  - D. Information technology software
  
3. XYZ company is undertaking a project to identify how to lay out the equipment in their packing and dispatch area. It is common practice in the organization for project team members to receive bonus pay when a project is completed on time. This common experience is known as:
  - A. Regulations, policies, methods and procedures
  - B. Shared vision, mission, values, beliefs and expectations
  - C. Organizational culture, structure, and governance
  - D. Operating environments
  
4. The YUI company manufactures food products. When projects take place the project manager has a low level of authority, a low level of access to resources and is usually appointed on a part-time basis. This is an example of which type of organizational structure:
  - A. Balanced matrix
  - B. Strong matrix
  - C. Project-oriented
  - D. Weak matrix
  
5. The KLM company produces power systems for electricity suppliers to consumers. Their company is structured into different departments for manufacturing, engineering, human resources, finance, sales etc. This is an example of which organization type:
  - A. Balanced matrix
  - B. Weak matrix
  - C. Organic or simple
  - D. Functional
  
6. Which of the following is not an organizational process asset:
  - A. Artifacts and practices that can be used to govern the project
  - B. Organizational policies, processes and procedures
  - C. Lessons learned and historical information
  - D. The organization's culture and style

7. An organization's change control procedures, including the steps by which performing organizations standards, policies, plans, and procedures or any project documents will be modified, and how any changes will be approved and validated are typically used to support which major process group:
- A. Closing
  - B. None of these
  - C. Executing, Monitoring and controlling
  - D. Initiating and Planning
8. Issue and defect management data bases are known as part of the organization's:
- A. Organizational conscience
  - B. Organizational knowledge repositories
  - C. Corporate history
  - D. Organizational memory package
9. Which of the following is not an example of an enterprise environmental factor:
- A. The political climate
  - B. Stakeholder risk tolerances
  - C. Completed schedules, risk data and earned value data
  - D. Company work authorisation systems
10. The QPR company has been constructing office buildings for many years. Recently, new building regulations have meant that the company has had to change the way that it does its project work. This is an example of the impact of:
- A. Organizational process assets
  - B. Project conditions
  - C. Enterprise environmental factors
  - D. Project methodology
11. A collection of various components that together can produce results not obtainable by the individual components alone is known as:
- A. A collective
  - B. An organization
  - C. A system
  - D. A network
12. The framework, functions, and processes that guide project management activities in order to create a unique product, service, or result to meet organizational, strategic and operational goals is known as:
- A. The project methodology
  - B. The project approval framework
  - C. The project governance framework
  - D. The project management structure

13. Contracting and purchasing constraints, approved providers and subcontractors, and collaboration agreements are examples of:
- A. Infrastructure
  - B. Employee capability
  - C. Resource availability
  - D. Organizational culture, structure and governance
14. Company TUV have established a project team that has members in various locations around the world. The team use Skype to conference with each other and Dropbox to share documents and files that are relevant to their project. They rarely meet face to face. This type of team is known as:
- A. A temporary team
  - B. A part time team
  - C. A co-located team
  - D. A virtual team
15. Which of the following is not a principle of a system:
- A. Systems are dynamic
  - B. Systems are non-linear in responsiveness
  - C. Systems can be optimised
  - D. Systems are static
16. Which of the following is an enterprise environmental factor that is not external to the organization:
- A. Financial considerations
  - B. Marketplace conditions
  - C. Academic research
  - D. Information technology software
17. Which of the following is not an initiative and planning process or procedure for conducting project work:
- A. Preapproved supplier lists and various types of contractual agreements
  - B. Guidelines and criteria for tailoring the organization's set of standard processes and procedures to satisfy the specific needs of the project.
  - C. Financial controls procedures
  - D. Product and project life cycles, and methods and procedures
18. Which of the following is not a key function or principle of management:
- A. Systems can be optimised
  - B. Paid fairly for work performed
  - C. Authority given to perform work
  - D. Unity of command

19. Which of the following is a characteristic of a strong matrix organizational structure:

- A. The project manager's authority is moderate to high
- B. The project manager's authority is high to almost total
- C. The project manager's authority is low
- D. The project manager's authority is low to moderate

20. Constraints on projects are imposed by the organization through:

- A. The project manager
- B. The structure and governance framework
- C. The external governance framework
- D. Organizational management

## Quizlet Flashcards

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### **Enterprise environmental factors (EEFs)**

Factors that exist in the environment in which the project is being conducted, either inside the organization (internal EEFs) or outside it (external EEFs), which may influence the project activity and which the project team and the project manager have no control over.

### **Organizational process assets**

Appearing frequently as inputs to processes in the PMBOK, they include such things as previous project plans and processes for recruitment. They are divided into Processes, Policies, and Procedures and Organizational Knowledge Repositories.

### **Processes, Policies, and Procedures**

Organizational process assets that are not usually changed by the work that is done on the project, such as processes used for recruiting project team members or sourcing suppliers of project materials.

### **Organizational Knowledge Repositories**

Organizational process assets that the project itself may contribute to, such as new documentation, procedures and policies. New and current projects may benefit from these as well, such as from previous project plans.

### **Organizational systems**

PMBOK provides an introduction to this field and basic guidance. These are combinations of factors that interact and create results. These determine the culture of the organization and what it can achieve.

## **Governance of the organization**

The elements that are intended to influence the behaviour of the people within the organizational system. It includes the jobs that people do, the structure that is used to organize their relationships with each other and how people are directed and communicated with.

## **Framework of governance**

How authority appears in the organization, including the rules, policies, procedures and norms that govern people's activity as well as the relationships, systems and processes that they work within. Determines many aspects of organizational activity including its objectives, the risks it will take and the performance that it will achieve.

## **Management elements**

Exist within the framework of governance and the organization structure. These include, for example, how job roles are defined, the levels of authority that each person has and workplace safety and morale, etc.

## **Organizational structures**

These depend on many factors, including the organizational objectives, costs, how people will be managed (authority, responsibility, communications), people's physical location, etc. These structures vary in power and resources that the project manager has and influence how they will do their job.

## **Organic organizational structures**

Also referred to as simple, in these structures people work together with little authority over each other. Project managers have little authority in these typically small organizations.

## **Formal organizational structures**

Projects are rarely conducted in these operationally focused organizations.

## **Functional organizational structures**

Managers of these organizations have more power and resources than project managers. These organizations are larger structures that can exist in multi-national organizations. The project team will often be people over whom the project manager has less authority.

## **Virtual organizational structures**

These organizations are common with various levels of authority for project managers.

### **Matrix organizational structures**

These organizational structures fall in the middle of the functional-to-projectized spectrum.

#### **Weak matrix organizational structures**

Matrix structures that are more functionally oriented.

#### **Strong matrix organizational structures**

Matrix structures that are more projectized.

#### **Balanced matrix organizational structures**

Matrix organizations in the middle of weak and strong matrices.

#### **Projectized organizational structures**

The project manager will have significantly more power in this organizational structure, with the project team mainly reporting to them. The project manager will typically have access to more resources, usually with full time administrative support.

#### **Hybrid organizational structures**

This organizational structure combines different structures.

### **Project Management Office (PMO)**

1. Support the project activity that takes place inside the organization. They manage the standardization of how projects are managed in the organization and provide resources to projects to help them do their work, including project methodologies, tools and techniques.
2. Usually monitor the performance of projects, assessing their contribution to strategic objectives of the organization and providing reports for the organization's decision-making structures.
3. They may have the authority and responsibility to intervene in projects to make their alignment with strategic objectives more effective. Some have the authority to terminate projects if required.
4. In comparison to the project manager, who is responsible for managing an individual project, they are focused on the portfolio of projects to align with the organization's strategic goals.

## Test Your Knowledge — CAPM Content Chapter 2 Answers

1. C
2. C
3. C
4. D
5. D
6. D
7. C
8. B
9. C
10. C
11. C
12. C
13. C
14. D
15. D
16. D
17. C
18. A
19. A
20. B