Project Management models and methodologies

Overview of key Project Management Models

Waterfall model

→ Approach where the project activities are divided into sequential phases.

→ Each phase must be completed before the next can begin.

Phases:

System & SW requirements → Analysis → Design → Coding/Build/Develop → Testing → Operations

→ Altering a plan would be exceedingly costly

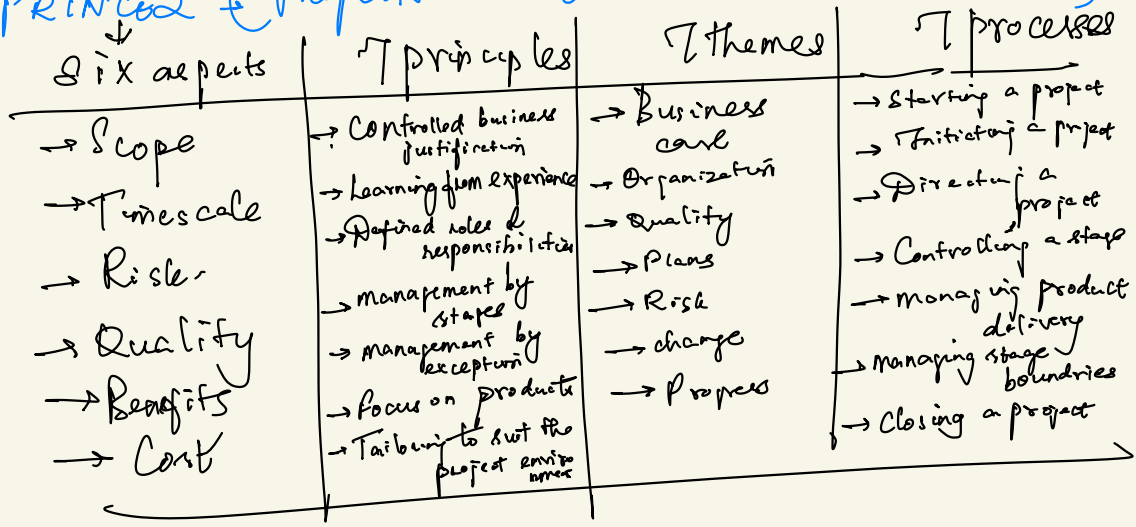
→ Has shortcomings when the requirements are large.

→ Good for smaller projects which has a concrete vision, plan requirements, and end goal frameworks

Different frameworks

→ PMBOK

→ PRINCE2 (Projects in Controlled Environment)



↔ Rest everything is covered in Overview of Key Project Management models.

Project evaluation

→ Frequency of deliverables

→ Frequency of modifying specifications/ requirements.

Approaches

→ Predictive → waterfall → (Planning - Implementing - Closing)

→ Lower scope & delivery frequency

→ Incremental → Successful elements

→ Developed in increments

→ Early modifications is possible

→ Iterative approach

→ Frequent deliverables

→ Ongoing improvements

→ 1-Define 2-Measure 3-Analyze 4-Implement the process

→ Agile → used when there are multiple deliverables and many changes

→ Define user stories

→ Sprint

→ Review

→ Retrospect

Agile team

→ Organized collaboration

→ Iterative approach

→ No project manager

Scrum master

Product owner

Stacey's matrix (used to determine the approach needed to deliver a project successfully & their management)

→ Human organizations

Two criteria

* Requirements Uncertainty
* Technical degree of uncertainty

determining the level of agreement btw key stakeholder on final project deliverables

determining the technology required to implement the project.

→ When Tech is complex and agreement is low, prefer Agile

→ When agreement is high and complexity is low, prefer traditional (or) waterfall.

Degree of change expected	Frequency of Delivery required	Lifecycle approach
High	H	Agile
High	L	Iterative
Low	H	Incremental
Low	L	Predictive

→ Best lifecycle approach (from Quiz)

(not related to Stacey matrix)

Project management phases

What are project phases?

→ phases divide projects
→ phases help in planning and provides structure

Different models use different phases

Lean → Define, measure, explore, develop & implement

Six sigma → DMAIC [Define Measure, Analyze Improve control]

Waterfall → Requirements, System design, Implementation, Testing, Deployment, Maintenance

Extreme programming / SW dev → One time planning phase → Designing | Coding | Testing | Listening in repeated iterations

⇒ Phases are often similar

Part 1

Project phases

- Initiation
- Planning
- Execution
- Monitoring & Controlling
- Closing

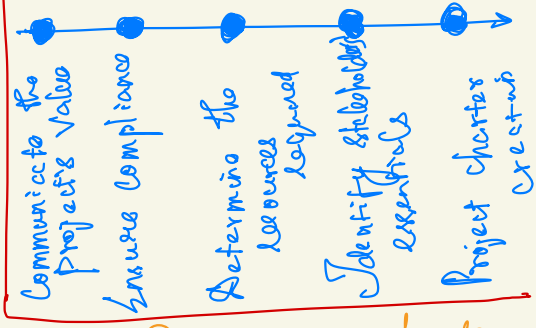
Used in this course

→ Tailor your approach based on model & approach you choose.

All of them follow more or less the 5 phases

Part 2 Project Alignment

5 objectives



Different types of organizations

- Effect of organizational structure
- Organizational structure
- Aligning project objectives

Organizational structure determines:

- Task division
- Resource deployment
- Team coordination
- Employee's role

PM should be aware of identifying the organizational structure and adapt accordingly

Principles of building an organizational structure

- Project manager's authority
  - can decide
  - order & allocate resource
  - higher authority
  - can have greater authority & can influence others
- Project Manager's role
  - can be full time / part time
- Resource availability
  - some organizations provide resource
  - In some, PM needs to face this challenge
- Budget control
  - mostly PM is responsible
  - In some functional manager will be employed

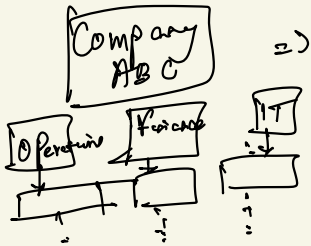
Project management administrative staff

staff mix varies

Types of organizational structures

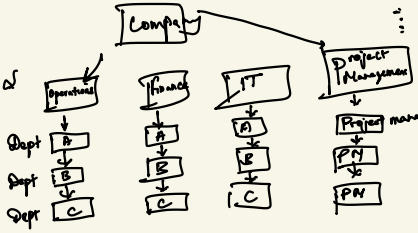
Functional structure (Hierarchical)

→ => Top down decision making



=> Project manager's role would be challenging as the decision making power is centralized

Matrix organizational structure



=> Teams/groups report to multiple team leaders => eg to project manager and also to the functional heads

Matrix structure Types

Weak
- Less power
- provides support

Balanced
- More authority & decision making power

Strong
- More power than functional manager
- Determine resource allocation

PMO → Project Management Office → Supports Project Managers at a strategic level

Benefits
1. Standardizes processes
2. facilitates distribution
3. Improves project management

What does PMO do
1. Identify efficiencies
2. Provide support
3. Standardize
4. Allocate.

- Help in documentation is captured & archives
- Work with organization & project managers on resource allocation
- Coordinate & look ahead

Types of PMO
- Supportive (shares info & best practices)
- Controlling (some decision making process)
- Directive (have high degree of power over standards, processes, templates, reporting documentation)
  (also resources allocations)

Summary

→ Projects → Predictive (waterfall, lean, six sigma) (flow, continuous, reduced waste)
↓ (statistical approach to reduce errors, data driven)
→ Adaptive (Agile)
↓ (scrum, kanban)

→ Organizations can impact a project manager's ability to be successful. The primary impact is on authority, role, resources, availability of staff, control of budget

→ 3 types of PMOs → supportive
→ controlling
→ di