# Project Management & Industrial Development

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**Abstract- A project is an undertaking with specific start and end parameters designed to produce a defined outcome, such as implementing a new computer system. A project is a temporary endeavor, and as such is different from ongoing processes, such as a governance program or an asset management program, Project management is the discipline of using established principles, procedures and policies to successfully guide a project from conception through completion. Often abbreviated as PM, project management requires the application of those principles and procedures as well as tools and technologies to ensure that a project can be completed in a way that meets all articulated outcomes, from spending limits to end-goal objectives. The project management plan is expected to effectively and efficiently guide all aspects of a project from start to finish, with the ideal goal of delivering the outcome on time and on budget. A project plan often begins with a project charter, and it is expected to identify potential challenges in advance. Risk management is needed to anticipate and handle any roadblocks or surprises that arise so that the project keeps on schedule. Project management commonly involves overseeing teams from multiple functional areas within an organization as well as overseeing teams and workers from multiple organizations who are expected to work together for part or all of the project's duration to reach the common goal. Project managers, thus, need to be able to communicate effectively across many disciplines and inspire unity of action among many workers in order to deliver a successful project. People have been managing projects throughout history, although it wasn't until the mid-20thcentury that the art and science of shepherding a project from beginning to end became a formal management discipline. Industrial development is a very important aspect of any economy. It creates employment, promotes research and development, leads to modernization and ultimately makes the economy self-sufficient. In fact, industrial development even boosts other sectors of the economy like the agricultural sector (new farming technology) and the service sector. It is also closely related to the development of trade.**
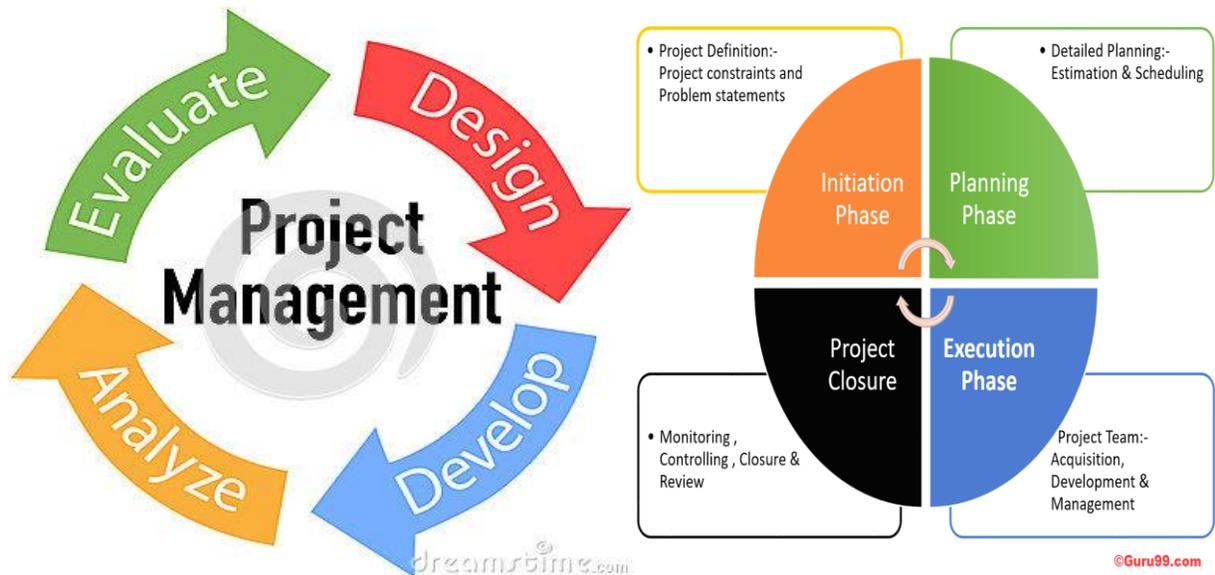
## I. INTRODUCTION TO PROJECT MANAGEMENT

There are five phases of the project management life cycle. The project management life cycle five phases: initiation, planning, execution, Project Monitoring and Control and closure—these make up the path that takes your project from the beginning to the end. Dividing your project management efforts into these five phases can help give your efforts structure and simplify them into a series of logical and manageable steps.

Project Initiation. ...

Project Planning. ...

Project Execution. ...

Project Monitoring and Control. ...

Project Closure.

Additionally, project management professionals identify multiple discreet areas they must manage as part of their roles and responsibilities. They commonly identify 10 such areas to manage as:

| | | |
|---|---|---|
| Integration | Quality | Communications |
| Scope | Procurement | Risk |
| Time | Human resources | Stakeholder |
| Cost | | |

To Create a Project Plan in 5 Easy Steps.
Step 1: Understand the scope and value of your project. ...
Step 2: Conduct extensive research. ...
Step 3: Ask the tough questions. ...
Step 4: Create your project plan outline. ...
Step 5: Talk with your team. ...
Step 6: Write your full project plan.
The Basic Principles of Project Management are

| | |
|---|---|
| What is Project Management About? ... | Transparency About the Project Status. ... |
| Project Structure. ... | Risk Recognition. ... |
| Definition Phase. ... | Managing Project Disturbances. ... |
| Clear Goals. ... | Responsibility Of The Project Manager. |

*1.1 Project Planning*
Project planning is the process of establishing the scope and defining the objectives and steps to obtain them. It is one of the most important of the processes that make up project management. The output of the project planning process is a project management plan.

*1.2 Project Plan*
A project plan, also known as a project management plan, is a document that contains a project scope and objective. It is most commonly represented in the form of a gantt chart to make it easy to communicate to stakeholders.
Learning how to develop a project plan doesn't need to be complicated. Keep reading to learn what project planning steps to follow to create a project plan that your team will love.

## II. TEN SIMPLE STEPS TO WRITE A PROJECT PLAN
1. Understand the scope and value of your project plan
2. Conduct extensive research
3. Ask the tough questions
4. Create your project plan outline
5. Talk with your team
6. Write your full project plan
7. Execute your plan in TeamGantt
8. Publish your plan
9. Share your plan with the team and make sure they read it!
10. Prepare to keep planning

Step 1: Understand the scope and value of your project
At its core, a project plan defines your approach and the process your team will use to manage the project according to scope. Every project needs a plan; not only does it go a long way toward keeping teams honest in terms of scope and deadlines, a plan communicates vital information to all project stakeholders. If you approach it as something more than a dry document and communicate that aspect of it differently to everyone involved, it can and will be seen as integral to your project's success. The fact is, a plan is more than dates. It's the story of your project, and you don't want it to be a tall tale! Like any well-written story, there are components that make it good. In fact, any solid plan should answer these questions:
What are the major deliverables?
How will we get to those deliverables and the deadline?
Who is on the project team, and what role will they play in those deliverables?
When will the team meet milestones, and when will other members of the team play a role in contributing to or providing feedback on those deliverables?

If your plan answers those questions and educates your team and clients on the project logistics, you're creating a viable, strategic game plan for your project. Feel like you've written a work of fiction? Use those questions as a gut check after you've created your plan, and keep reading. There are a few steps you can take to ensure that your project plan goes down in history for being well-written and on target.

At its core, a project plan defines your approach and the process your team will use to manage the project to scope.

Step 2: Conduct extensive research

Before you start creating a project plan, you have to stop yourself and make sure you know all of the facts. Take a deep breath, then dive into the documents and communications relevant to the project. Print the scope of work and all details that come along with it (maybe an RFP or notes from sales calls or meetings with your client team) and read them end to end. Be thorough. Understand the details and ask thoughtful questions before you commit to anything. A good project manager is well-informed and methodical in the way he or she decides to write a project plan. At a minimum, you'll be responsible for possessing a thorough understanding of:

The goals of the project

Your client's needs and expectations

The makeup of your client team and their decision-making process (i.e., how they'll review and approve your team's work), which might answer:

Who is the project sponsor, and how available is he or she?

Who is the PM, and will he or she plan on being in constant contact with you (they need to be)?

Who are the additional stakeholders your team should be aware of?

Set time aside with your client to ask some tough questions about process, organizational politics, and risks.

Step 3: Ask the tough questions

In addition to all of your questions about your client team and their expectations, set some time aside with your main client contact and ask them some tough questions about process, organizational politics, and general risks before creating a project plan. Doing so will not only convey that your team has the experience to handle any type of difficult personalities or situation, it shows that you care about the project and want it to run smoothly from the start.

Questions that may impact a project plan:

Has your team discussed how you will gather feedback?

Who is the final sign-off? Or, who owns the project?

Is there a stakeholder we need to consider who is not on your list? (A president, dean, the boss's wife?)

What is the project deadline? What are the factors or events that are calling for that date? (a meeting, an ad campaign, an event?)

Are there any dates when you will be closed or not available?

Will there be any meetings or points in the project where you'll want us to present on the current project status to a larger group (i.e., a board meeting)?

Has your team been through a project like this in the past?

How did it go?

Is there anything that would prevent the project from being successful?

Is there a preferred mode of communication and online project planning tools?

Are there any points in the process that some stakeholders might not understand that we can explain?

Step 4: Create your project plan outline

After getting the answers you need, take some time to think about the responses in in light of the project goals and how your team might approach a similar project. If you're at a loss for where to start, take a look at the questions at the beginning of this chapter to outline the who, what, when, and how of the project. Think about the tasks that are outlined in the scope of work and try to come up with a project planning and management approach by sketching something very high-level on paper. Yes, paper. All you need is a calendar to check dates.

Make sure your sketch includes:

Deliverables and the tasks taken to create them

Your client's approval process

Timeframes associated with tasks/deliverables

Ideas on resources needed for tasks/deliverables

A list of the assumptions you're making in the plan

A list of absolutes as they relate to the project budget and/or deadlines

Side Note: There will always be multiple ways to execute the work you're planning, and it's easy to focus on what the end product will do and what it will look like. Think about the mechanics of how it will happen, not what it will look like when it's complete. Getting tied up in the execution will only confuse you and likely make you feel

unimpressed by the final product because it's not what you envisioned. Remind yourself: You're there to plan and guide the project, not create it.

Doing this will help you to organize your thoughts, formulate what might work for the project, and then transform everything into a discussion. Take this time to build a simple project plan outline—it doesn't have to have all the details just yet. It may seem like a lot, but it all leads to building a solid, sustainable plan.

Step 5: Talk with your team

Starting a project must begin with clear communication of the project goals and the effort required to meet them. This comes with understanding the fact that a project manager can't be the only one writing a project plan. Sure, you could try—but if you're interested in team buy-in, you won't.

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It's also great to utilize the super-smart folks surrounding you to get their input on how the team can complete the tasks at hand without killing the budget and the team's morale. As a project manager, you can decide on waterfall or agile approaches, but when it comes down to it, you need to know that the team can realistically execute the plan.

You can also use your project plan review time to question your own thinking and push the team to take a new approach to the work. For instance, if you're working on a website design, can designers start creating visual concepts while the wireframes are being developed? Will it make sense for this project and for the team? Can you have two resources working on the same task at once?

Running ideas by the team and having an open dialogue about the approach cannot only help you with building a project plan, it's also a big help in getting everyone to think about the project in the same terms. This type of buy-in and communication builds trust on a team and gets people excited about working together to solve a goal. It can work wonders for the greater good of your team and your project.

Step 6: Write your full project plan

When you've got all the info you need and you've spoken to all parties, you should feel more than comfortable enough to put together a rock solid project plan using whatever tool works for you. (Ahem, TeamGantt works nicely for a lot of happy customers). Any good online project planning tool will help you to formalize your thoughts and lay them out in a consistent, readable way.

Make it readable

There is no doubt that reading a project plan can be...boring. So, in order to stop your dear readers from skimming your work of art, use some formatting skills to make sure tasks, durations, milestones, and dates are crystal clear. Try to make a simple project plan—the more straightforward and easier to read it is, the better. No matter what tool you're using, you should include these features:

Include all pertinent project info:

Client Name, Project Name

Version Number, Delivery Date

Break out milestones and deliverables in sections by creating headers and indenting subsequent tasks. (Reading one long list of tasks is really monotonous and can be mind-numbing even to the best of us.)

Call out which team is responsible for each task. (Example: "CLIENT: Provide feedback")

Add resources responsible to each task so there is no confusion about who is responsible for what.

Be sure to show durations of tasks clearly. Each task should have a start and end date.

Add notes to tasks that might seem confusing or need explanation. It never hurts to add detail!

Call out project dependencies. These are important when you're planning for the risk of delays.

Include your company's logo and your client's logo if you're feeling fancy.

Use your company's branded fonts if you're feeling really fancy.

In addition to all of this, you should be as flexible as possible when it comes to how your project plan is presented. There is no absolute when it comes to how you represent your plan as long as you and your team understand what goes into one. Remember, people absorb information differently; while some people prefer a list-view, others might prefer to see a calendar, or even a gantt chart.You can make all of those variations work if you've taken the steps to create a solid plan.

You should be as flexible as possible when it comes to how your plan is presented.

Step 7: Execute your plan in Team Gantt

TeamGantt, an online project planning tool, gives you the ability to quickly and easily build a project plan using most of the tips listed above, and makes it even easier to adjust using a simple drag and drop feature. Creating a gantt chart based on the steps you've outlined for your team is easy and kind of fun. Plus, once you have created your project, you can have peace of mind knowing that you thought ahead and have a plan to guide you along as you go. Try it out, and create a gantt chart for completely free!

Step 8: Publish your plan

You're almost finished! You've done your research, sketched your approach, discussed it with your team, and built your formal project plan. Do yourself one quick favor and ask someone on your team to review it before you hand it over to your clients. There's nothing more embarrassing than being a project manager and delivering a plan with an error—like an incorrect date. It'll take someone 10 minutes, and you'll have peace of mind.

Step 9: Share your plan with the team and make sure they read it!

After you've put all of that work into creating this important document, you want to make sure that it has actually been reviewed. When you're delivering your project plan, make sure you provide a summary of it in prose format. A brief message that covers the overall methodology, resources, assumptions, deadlines, and related review times will help you to convey what the project plan means to the project and to everyone involved.

Don't be bashful about it: explain the thought that has gone into the process of building the project plan, and open it up for discussion. It can be good to set up a call to review the plan line by line with a client. This ensures that your client will understand the process, and what each step in the plan means. Sure, you might have to explain it a few more times, but at least you're making the effort to help establish good project planning standards across the board and educate your clients on how your team works. And again, it shows that you care.

Step 10: Prepare to keep planning

Sometimes projects are smooth and alarmingly easy to manage, and sometimes they are a complete nightmare that wakes you up at 3 a.m. every other night (it happens). Regardless, plans will change. With a good team and a clear scope of work, you're on your way to making a solid plan that is manageable and well-thought-out. In the end, having a solid plan is your best defense against project chaos.

If you're an easygoing project manager who can adapt your approach and your plan to go with the flow while calling out the appropriate risks, you'll find yourself happy. Otherwise, the daily changes will cloud your vision, and you'll focus on things that won't help your team, your client, or the project. And remember: project managers can have fun too! So pick up your project scope, dig into your own research, and start writing your next masterpiece.

## III. THE PROJECT MANAGEMENT OFFICE

Many large and even medium-sized organizations have created a department to oversee and support projects throughout the organization. This is an attempt to reduce the high numbers of failed projects. These offices are usually called the project management office or PMO.

The PMO may be the home of all the project managers in an organization, or it may simply be a resource for all project managers, who report to their line areas. Typical objectives of a PMO are:

1. Help ensure that projects are aligned with organizational objectives
2. Provide templates and procedures for use by project managers
3. Provide training and mentorship
4. Provide facilitation
5. Stay abreast of the latest trends in project management
6. Serve as a repository for project reports and lessons learned

## IV. TEN PROJECT MANAGEMENT KNOWLEDGE AREAS

Project management is just about assigning and following up on tasks. The Project Management Knowledge Areas are essentially what you need to know about effective project management. Listed below are the 10 areas at a high level along with a few of the process groups or action items associated with each of them.

### 4.1. Project Integration Management

Project integration management is the umbrella that covers all your other project management knowledge areas. It knits together all your individual processes and tasks into one project with defined goals and deliverables. If you're looking at the big picture and how your project fits into your larger organization, this is the project management knowledge area you need.

### 4.2. Project Scope Management

As you complete your scope process groups, you'll create a management plan that defines, validates, and controls scope. These processes will ensure you stay on task and that everyone, including the project requester, understands what tasks will be included in the project to keep up with the expectations.

### 4.3. Project Time Management

Nearly all projects rely on several different timelines and the schedules of multiple people. Some team members may overestimate how much time it will take to complete a project in order to leave a cushion and not feel hurried. Others may underestimate their time. And, of course, unexpected problems will throw off your timeline as well.

But, these variables are exactly why effective time management is so critical. Your plans will determine which tasks can be adjusted and how the team's resources will be allocated and managed throughout the project. When those tricky problems surface, you'll be glad to have a plan to refer back to and quell the panic.

### 4.4. Project Cost Management

With or without a budget, your project will cost money. Keeping costs low or at least at an expected or reasonable level is a fundamental part of showing ROI on a project. After all, if you can't definitively lay out how much a project will cost, how will you be able to quantify if you've made any money. You'll need to continuously evaluate your costs to avoid any surprises at the end of a project.

### 4.5. Project Quality Management

In project management, quality isn't the same as perfection. It's not practical to spend the time and resources to take a project to perfection; and in many cases, that's not even attainable. The goal of project quality management is to achieve consistency across your projects.

If you know and understand the expectations of your stakeholders and have created reasonable agreements with them and your team, quality control will ensure you're delivering great work every time. If you notice projects aren't meeting results, you can adjust course and implement changes to the process or product to get back on track.

### 4.6. Project Human Resource Management

Working with people is part of the reason you signed up for project management. One of the most rewarding parts of this process is creating teams that click and helping individual team members grow and learn new tasks. That's why this project management knowledge area is more than just setting schedules and assigning tasks.

Effective resource management requires you to know and work with the bandwidth of your team, identify their individual strengths and weaknesses, and their synergy with other team members. And, back to that part about helping team members grow. You should also identify knowledge gaps and opportunities for continued training for individual team members and the entire team based on current and upcoming projects. You'll set your team up for success and increase commitment as you invest in their skills and growth.

### 4.7. Project Communications Management

When changes happen, maybe important stakeholders were left out, there is a fine line between under and over communication and your communications management plan is crucial to identifying who needs to know what and when before your project starts.

### 4.8. Project Risk Management

The truth is that no project goes off without a hitch, and it's unrealistic to look at a project and assume that everything will go smoothly. If you can manage your firefighting by identifying major project risks and the mitigation plans associated with them, your team and project requesters will be prepared and more forgiving when issues in a project come up. As an added bonus, you'll have the benefits of time and energy upfront rather than trying to troubleshoot at the eleventh hour when your team is stressed and up against a deadline.

### 4.9. Project Procurement Management

In some cases or areas of a project, you won't have the resources or team members in house to complete a task. If you hire contractors or vendors to take on certain tasks, you'll want them to be seamlessly integrated into the team. This project management area gives the plan for which tasks or services will be completed by outside contractors. It also builds and plans the legal paperwork and coordination process ahead of time.

### 4.10. Project Stakeholder Management

Ultimately, the success or failure of a project depends on the delivery of your project to the stakeholders. But, who are your stakeholders?

Stakeholders include not only the project requester, but also team members who have worked on the project, contractors, suppliers, customers or the public, and many other people internal and external to the organization.

Not all stakeholders are equal in the eyes of the project. Identifying who is a stakeholder in a project and how they are involved in the process will make sure everyone gets the information they need to know—no more, no less.

## V. SKILLS OF THE MOST SUCCESSFUL PROJECT MANAGERS AND WHAT YOU HAVE TO IMPROVE

1. Solid understanding of business cases and risk management processes
2. Expert knowledge to meet specific circumstances
3. Proven project management and self-management skills
4. Strong leadership skills
5. Ability to monitor and control budgets
6. Critical thinking
7. Good communication and negotiation skills
8. Capability to make decisions under pressure
9. Strong interpersonal skills necessary to lead a team
10. Ability to define situations, document data, and draw conclusions
11. Strong business acumen
12. Ability to interpret instructions regardless of their form
13. Strong organizational and multitasking skills
14. Creative mindset
15. Mnalytical skills
16. Accuracy and attention to detail
17. Excellent time management skill
18. Capacity to maintain schedules and meet deadlines
19. Problem-solving skills
20. Self-motivation
21. Accountability
22. Working knowledge of project management tools

### 5.1 Project Management Methodologies

There are various methodologies that project managers can employ to deliver a successful project. Different PM methodologies include:

➢ Agile: A methodology used for speed and flexibility, which features short delivery cycles.
➢ Critical Chain Project Management (CCPM): An approach that focuses on the use of resources, rather than on timelines.
➢ Critical Path Method (CPM): A step-by-step PM technique.
➢ PRINCE2: Originated and still widely used by the U.K. government to manage projects, this approach has also been adopted by private industry internationally.
➢ Waterfall: A management style that is sequential in nature.
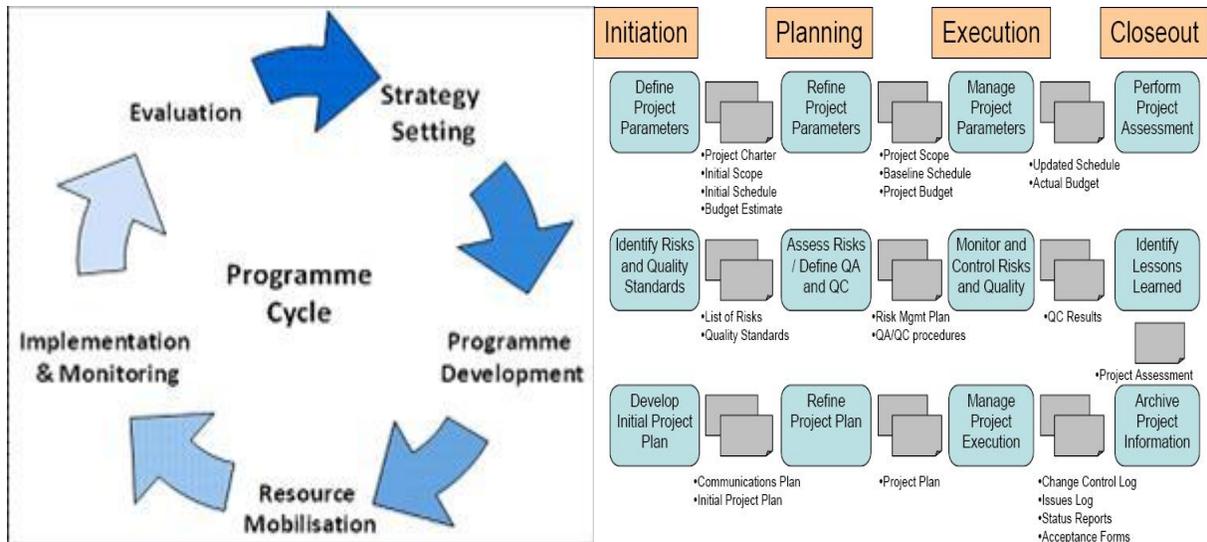
## VI. WE HAVE ANALYZED OVER 200 LINKEDIN WORLDWIDE JOB POSTINGS AND COMPILED THIS LIST OF THE MOST COMMON PROJECT MANAGER RESPONSIBILITIES

1. Direct all project management phases
2. Set and manage project expectations with external and internal stakeholders
3. Coordinate and track various projects through an entire project lifecycle
4. Develop a detailed project management plan to track project progress
5. Mentor, motivate, and supervise project team members
6. Develop professional business relationships
7. Define the overall scope of the project
8. Prioritize the tasks of the project
9. Create and continuously update the project documentation
10. Create accurate forecasts for revenue and resource requirements
11. Partner with all departments to ensure work is done according to demands
12. Establish effective communication
13. Ensure team members have all the necessary information
14. Track work times and maintain accurate daily time sheets
15. Ensure project tasks are executed and reviewed within the predefined scope
16. Align various teams to maintain the quality of deliverables
17. Report and escalate issues to management when necessary
18. Conduct project status meetings, daily stand-ups, and retrospective meetings
19. Continuously follow up on the progress, risks, and opportunities of the project
20. Focus on customer satisfaction
21. Manage projects through KPIs
22. Manage budgets and billings
23. Act as the main customer contact for project activities
24. Make recommendations for project improvements
25. Conduct workshops and trainings
26. Obtain customer input
27. Measure project performance using appropriate systems, tools, and techniques
28. Evaluate team performance

## VII. PROJECT MANAGEMENT VS.PRODUCT MANAGEMENT

Organizations value project management for its ability to keep projects on task and on budget and for its focus on completing projects to established outcomes. Organizations in the 21st century increasingly adopted product management as a complementary discipline. Although both disciplines focus on managing business endeavors, their roles are different. As already established, project managers manage projects -- temporary endeavors that have

predetermined start and end points. Product managers, on the other hand, are responsible for an entire product and own its success as well as the maintenance of it through its entire lifecycle.

## VIII. TASK MANAGEMENT

Project managers can employ various methods and approaches to run projects, generally selecting the best approach based on the nature of the project, organizational needs and culture, the skills of those working on the projects, and other factors. Managing a project involves multiple steps. Although the terminology for these steps varies, they often include:

- ➢ Defining project goals
- ➢ Outlining the steps needed to achieve those goals
- ➢ Identifying the resources required to accomplish those steps
- ➢ Determining the budget and time required for each of the steps, as well as the project as a whole
- ➢ Overseeing the actual implementation and execution of the work
- ➢ Delivering the finished outcome

As part of a strong project management plan, project managers implement controls to assess performance and progress against the established schedule, budget and objectives laid out in the project management plan. This is often referred to as the project scope. Because projects often require a project team or teams of workers who do not typically work together, effective project management requires strong communication and negotiation skills. Project managers also need to work closely with the multiple stakeholders who have interests in any given project, another area where strong communication and negotiation skills are essential.

Some of the most common areas that use project management services include:

- ➢ Engineering
- ➢ Construction
- ➢ Technology
- ➢ Financial Services
- ➢ Healthcare
- ➢ Law

## IX. INDUSTRIAL POLICY

Industrial development is the motive force behind economic growth. Industrial development is also a result of international economic competition. Development of technology-intensive industries is often the guiding principle of government for a developing country with limited natural resources and a small-scale domestic market. To assist technology-intensive industries, it is often necessary to subsidize research institutes and provide tax incentives. In addition to encouraging universities to diffuse knowledge for industrial development, the cooperation of industry, government, universities and non-profit research institutes in order to develop technology-intensive industries is critical for a national innovation system in an economy such as Taiwan's, with limited scientific and technological resources. Innovation almost always means the creation of a product, service, or process that is new to an organization. It is the introduction into the marketplace, either by utilization or by commercialization, of a new or improved product, service, or process.

But just after independence India's industrial sector was in very poor condition. It only contributed about 11.8% to the national GDP. The output and productivity were very low. We were also technologically backward. There were only two established industries – cotton and jute. So it became clear that there needed to be an emphasis on industrial development and increasing the variety of industries in our industrial sector. And so the government formed our industrial policies accordingly.

### 9.1 Control of the State
- ✓ One of the biggest hurdles in industrial development was the lack of capital. Private industrialists did not have enough capital to build a new industry.
- ✓ And even if they did, the risk involved was too high. So, it was decided that state would play the primary role in promoting the industrial sector.
- ✓ So the state would have absolute and complete control over all industries that were vital to the economy and the needs of the public.
- ✓ Coal, petroleum, aviation, steel etc were all reserved exclusively for the state.
- ✓ The private sector could provide services complementary to those by the state.

✓ The public enterprises thus had a monopoly over the markets for many years to come.

## X. INDUSTRIAL POLICY RESOLUTION 1956

During the second five-year plan the industrial policy resolution came into action. The aim was to introduce more private capital int the industry but in a systematic manner. So this resolution classified industries into three categories as seen below,

First Category: Industries exclusively owned only by the State

Second Category: Industries for which private sectors could provide supplementary services. These industries would still be mainly the responsibility of the State. And also only the State could start new industries

Third Category: The remaining industries which fell to the Private Sector.

While any private company or individual could start an industry falling in the third category it was not that simple. The state still maintained control over these industries via licenses and permits. Every new industry needed a license and many permits from the appropriate ministry. They even needed permissions and permits to expand the present industry.

The aim behind such an industrial policy was to keep a check on the quality of the products. It was also an important tool to promote regional equality, i.e. make sure industries were developed in economically backward areas.
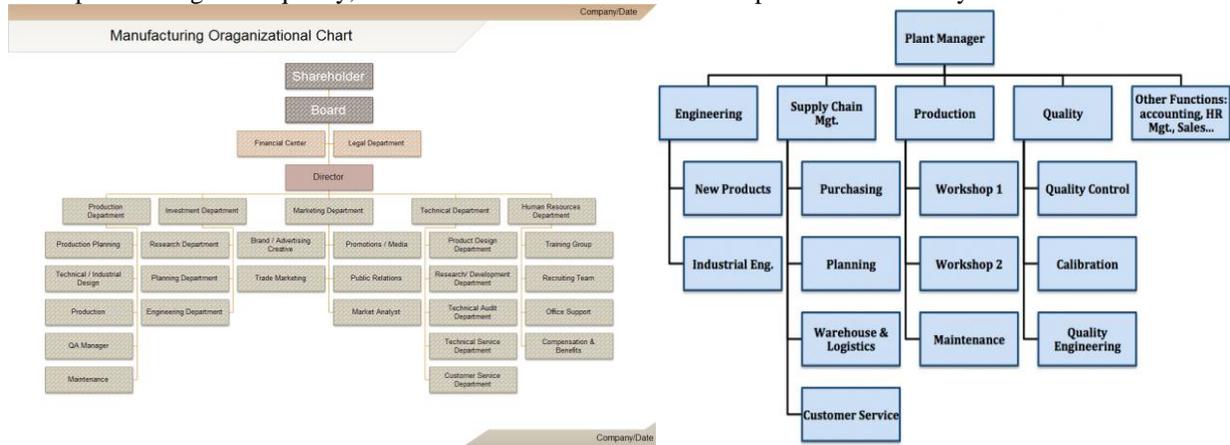


### 10.1 Small Scale Industries

In 1955 a special committee known as the Karve Committee advised the promotion of small-scale industries for the purpose of rural development. It was believed that since small-scale industries are more labour intensive they would create more employment. Also, the manpower requirement of small-scale industries is semi-skilled or unskilled which was suitable for those times. Small firms are generally those with fewer than 50 employees, while micro-enterprises have at most 10, or in some cases 5, workers

However, these small-scale industries cannot match up to large scale industries. So there were special goods and products reserved by the government. These could only be manufactured by small and medium scale industries. Such industries also got financial aid in form of loans and tax and duty breaks.

### 10.2 Medium Scale Industries

A business with 100-999 employees is considered to be medium-sized. Small and medium scale enterprises (SMEs) are understood in India as enterprises where the investment in plant and machinery or equipments is between Rs. 25 lakhs to Rs. 10 crores   in case of a manufacturing industry and between Rs. 10 lakh to Rs. 5 Crore in case of a service sector enterprise.

### 10.3 Large Scale Industries

Industries which requires huge infrastructure and manpower with an influx of capital assets are Large Scale Industries. In India, large-scale industries are the ones with a fixed asset of more than one hundred million rupees or Rs. 10 crores.The Indian economy relies heavily on such industries for economic growth, generation of foreign currency, and the creation of job opportunities for millions of Indians.

### 10.4 Here are some advantages of large scale industries:
➢ They provide an impetus to the industrialization of the country.

> Large scale industries, usually, produce capital and basic goods (instruments, machines, chemicals, etc.)
> They are capable of generating funds for the research and development of new technologies.
> Due to the large scale of operations, they have the potential to lower the cost of goods.
> Further, they create opportunities for small-scale and cottage industries to evolve and flourish.
> Also, the employment opportunities created by large scale industries are huge.

### 10.4 Large Scale Industries in India
The term 'large-scale' is generic in nature and includes different types of industries. In India, the following heavy industries fall under the purview of large scale industries:
> Iron and Steel Industry
> Textile Industry
> Automobile Manufacturing Industry
> Over the last two decades, Information and Technology (IT) industry has evolved and has contributed huge revenues while creating thousands of jobs for Indians. Hence, many economists include it in the large-scale industry sector.
> Telecom Industry



## XI. STRENGTHENING OF INFRASTRUCTURE FOR INDUSTRIAL DEVELOPMENT
One of the first requirements for the development of the economy is to improve the infrastructure of the country. The various other sectors of the economy cannot develop without the support of infrastructure facilities like transport, rail, banking communication etc.
So to develop these industries the government formed appropriate industrial policies. The development of most of these industries fell to the public sector. Like for example, the rail industry to this day remains firmly in the public sector.

### 11.1 Promotion of Capital Goods Industry
Capital goods are goods used in the production of other goods. Capital goods are not for direct sale to the consumer. But they are a hallmark of a good industrials sector. So the government decided to focus on the capital goods industry for the development of our industrial sector. So the Mahalanobis model came into effect in the second five-year plan. The focus here was on heavy industries, especially those that produce capital goods. This was to create a robust capital base for the economy. So industries of heavy metals, chemicals, machine building, tools, electrical etc all saw growth in this period. Such industries have massive capital requirements. But the government ensured they had enough capital to function smoothly. Soon there was a development of high-tech goods in the market as well.

## XII. THE FOLLOWING POINTS EXPLAIN THE ROLE OF INDUSTRIAL DEVELOPMENT IN ECONOMIC GROWTH
1. Modernisation of Industry
2. Development of Science and Technology
3. Capital Formation
4. Industrialisation and Urbanisation
5. Self-reliance in Defence Production

6. Importance in International Trade
7. Use of Natural Resources
8. Alleviation of Poverty and Unemployment
9. Main Sector of Economic Development
10. Fast Growth of National and Per Capita Income
11. Sign of Higher Standard of Living and Social Change

## XIII. THE STRATEGIES USED TO BUILD UP AN INNOVATION SYSTEM FOR HIGH-TECH DEVELOPMENTS WERE AS FOLLOWS

➢ In order to enable domestic industry to obtain a foundation for high-tech development, government, enterprises and experts and scholars from universities and non-profit research institutions pooled their talents, trying to build an innovation system for the development of high-tech industry;

➢ A high-tech industry with development potential and wide inter-industry interdependence was selected as the target to be developed. And then, the key technology in the industry to be built up was selected as the subject to be developed.

➢ The key technology was the one likeliest to increase greatly the industrial competitiveness. After an effort of some 20 years, the success of the innovation system for high-tech industrial development has been widely recognized.

➢ Among many other achievements, the computer industry has grown to be the third largest exporter in the world, surpassed only by the USA and Japan. In addition, the production volumes of more than ten products now rank first in the world, e.g. notebook personal computers (PCs), hand held scanners, and modems, to mention a few examples.

## XIV. SALES AND FORECAST OF CONSTRUCTION EQUIPMENT, 2017-2022 (UNITS)

| S.No | Name of the Construction Equipment | Sales Forecast 2017 | Sales Forecast 2018 | Sales Forecast 2022 | % Change 2017-2022 |
|---|---|---|---|---|---|
| 1 | Articulated Dump Trucks | 2 | 5 | 5 | 150 |
| 2 | Asphalt Finishers | 960 | 950 | 1150 | 19.79 |
| 3 | Backhoe Loaders | 35,745 | 45,565 | 46,155 | 29.12 |
| 4 | Compaction Equipment | 4765 | 5500 | 5600 | 17.52 |
| 5 | Crawler Dozers | 534 | 450 | 650 | 21.72 |
| 6 | Crawler Excavators | 20,062 | 24,350 | 31,400 | 56.51 |
| 7 | Crawler Loaders | 3 | 5 | 7 | 133.33 |
| 8 | Mini Excavators | 1021 | 1200 | 2000 | 95.89 |
| 9 | Mobile Compressors | 5108 | 5300 | 5500 | 7.67 |
| 10 | Mobile Cranes | 7749 | 11,000 | 12,000 | 54.86 |
| 11 | Motor Graders | 1081 | 1400 | 1500 | 38.76 |
| 12 | Rigid Dump Trucks | 426 | 459 | 550 | 29.11 |
| 13 | RTLTs | 175 | 200 | 350 | 100.00 |
| 14 | Skid-Steer Loaders | 799 | 600 | 750 | -6.13 |
| 15 | Wheeled Excavators | 2 | 5 | 7 | 250.00 |
| 16 | Wheeled Loaders | 2781 | 3300 | 3500 | 25.85 |
| 17 | Total | 81,213 | 100,289 | 111,124 | 36.83 |

## XV. CONCLUSIONS & RECOMMENDATIONS

I. Design Management is an area of engineering and project management that needs urgent attention, especially when global collaborative projects are to be executed.

II. While developing an application, as project size increases, the effort for development also gets increases, as effort and schedule are very closely related to each other

III. For any project, project manager must be a key person to estimate the project cost as he/she is the most skilled and experienced person of the organization.

IV. Cost estimation must be performed at the early phases of project development lifecycle as project feasibility analysis; budgeting, project planning and controlling all require estimated cost

V. As market trends are changing drastically, organizations are switching for new development methodologies. Estimation must be performed during Initial Project Proposal Stage. So management must

identify the cost estimates during the initial requirement or planning stage. Because if initial requirements went wrong then it will directly affect the overall cost of project. So, there must be a provision of re-estimation.

VI. There must be experienced team of management in the organization. Team must include highly qualified and experienced team of Project Managers, Technical Analysts or Business Analysts for Initial requirement information gathering stages.

VII. The four messages from engineering project management are, Engineers make a world of difference, Engineers are creative problem solvers, Engineers help shape the future, Engineering is essential to our health, happiness and safety

VIII. Areas of industrial growth observed include Steam, Water, Mechanical Production Equipment, Division of Labour, Eelectricity, Mass Production, Electronics, IT, Automated Production

IX. Industrial development is a key strategy that helps in reducing poverty by increasing Employment, Production of Goods & Services for Local, Regional. National & International wealth creation.

X. Industrial development plays a vital role in Entrepreneurial development by creating self-employment schemes

XI. The growth of India is directly related to the growth of rural and urban areas.

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