Project Management: Planning, Execution, Evaluation And Control

Dr. Sanjib Chowdhury

Vinod Gupta School of Management

IIT Kharagpur

Week- 01

Lecture- 01

Welcome to the course Project Management Planning, Execution, Evolution and Control. I am Professor Sanjib Choudhury from Indian Institute of Technology Kharagpur. I welcome you to this course. To start with today for the first lecture we will be covering module 1 that is Project Management, its Introduction and Basic Concepts. In lecture 1, we were covering these are the topics that we will be covering. The concepts that will be covered are importance of project management in the present day world, then what are the characteristics of project, program and portfolio.

Thereafter, we will cover the project life cycle, then role of a project manager vis-a-vis functional manager. Then the next lecture under this module, we will cover traditional and agile project management, current drivers of project management, project management, a socio technical approach. These we will be covering in the next lecture. To start with in this lecture, first what is the project approach? Today in the present business world everything we do we follow a project approach.

What do we mean by project approach? If we see in the modern day industries, project approach started with the construction industries. It also started with US defense forces, their contracts and all they followed a project approach. Then big consulting houses, they follow project approach. Hollywood in their golden era, they also follow a project approach and project approach is not confined to only these industries. Soon it has pervaded all the industries in all sectors be it manufacturing, be it logistics, be it services, be it government, non-government, profit, not for profit, charity, educational, entertainments, everywhere you will find today is the project approach.

We will be talking more about it in the next few slides. Soon now let us see the growth of project management, how the project management has evolved over the years. What you can guess when the project management started? Can anyone of you can tell it to me? In fact, if you find in the ancient days, take the case of great that Egyptian pyramid. Pyramid, how it was constructed? It took around 20 years to construct pyramid and this pyramid is a present 40 storey building height and how many stone pieces are there? Do you have any idea? There are around 2.3 million stone pieces and each stone piece

weighs 2 tons to 70 tons and this 2 tons to 70 tons stone pieces are faced with each other with an accuracy of 0.

04 inches. So, these were how did they put such big stone slabs to 2 tons to 70 tons? There must have been those technologies, but it is not known to us even today, that remains a mystery, but we can guess they must have built ramps from that using pulleys and all they have taken out those pieces and the its height is around 40 storey modern buildings. And not only that this if you see the base is 13 acres and the level from one end to another end is less than 1 inch less. So, you can see the what processions they have done this work and to get those transporting those stone pieces you have to do some quarry mining that quarry mining must have been far away. So, how did they transport those the first they have to cut those stone slabs then is a logistical that they have to take it out from the mines to the place of the pyramid.

So, how did they do it? It is it is guess they have done with the river transport with the river Niles they have carried it from there. So, it is estimated 1 lakh people that is 100,000 people were involved these in the quarry mining and transportations of all these stone pieces and there were another 40,000 skilled masons and their attendants they were fixing those on the on the that ramp and fixing those or those pyramids those slabs. And just imagine the planning part of it planning execution and the monitoring and control to feed those people say more than 1 lakh 40,000 people and all there must have been a great a township and their families workers families were there because they are away from the home for 20 years the family children then the women folk and the their food their sanitation their livelihood everything was there. So, it was a it was a great planning execution then then monitoring and control and the workers must have been sick or there must have been accident safety point of view. So, they must have the reserves for it they must have the medical team for it crisis management team of it.

So, it took the planning of a genius. So, what we call nowadays that pyramid may be a large scale project similar way we also find in ancient days, the great wall of China that also is a large scale project. So, these are the growth of project management. Nowadays if you see the development of a port or of an airport or of any software project, or development of any product, everything, the construction of an hospital, stadium, everywhere we follow a project approach and this project approach is now pervasive in all the sectors from mining, logistics, manufacturing, process industry, service industry, military, education everywhere it is now employing and following the project approach. Now further, the importance of project management can be gauzed with the fact that there is an institute called Project Management Institute in the US and in 1992 the memberships of this PMI - project management institute was 93000 people, in 2021 it has rose to 680000 people.

So, you can make out the popularity and the growth of project management has increased manifold. Further to it, if you see the US's GNP's project every year their 25 percent of the annual GNP is spent on projects. So, the other countries are also following the same trend. So, from the gross national product of a country say 25 percent is spent annually on project. So, these are the growth of project management and importance of the project management in a nutshell.

Now to start with, what is a project? If I ask you how do you define a project? A project is a temporary endeavor that is undertaken to create an unique product or service or result that is the definition of a project given by that project management institute's PMBOK that is project management book of knowledge, for your convenience I will write it down. Say project management PM is a temporary endeavor undertaken to create an unique product or service or result. So, it is a temporary endeavor to undertake. Now you look at it. Every project is temporary and undertaken to create an unique product service or result.

In other words we can say a project is a group of interrelated activities those are planned and arranged in a certain sequence to create a unique product or service or result. So, example of projects are construction of a house, construction of a dam, construction of a stadium these all are then laying of pipeline. These are all projects. So, these are temporary in nature, these are all projects are unique and it creates a product or service or result or development of a product development of a software product. These are called projects.

So, now we will see what is not a project? Any routine jobs are not projects suppose you are attending a class, it is a routine job; the assembly manufacturing of products that either in assembly shop or the process shops or the job shop, these are the routine jobs. So, any routine jobs are not project, but suppose if you are trying to clear the chartered accountancy it may be a project for you goes in a certain way. So, any routine jobs are not a project. So, next we will come what are the major characteristics of a project how do you define a project? So, we have already told every project has an established objective it has a certain life span like every project has a beginning and an end it has to end within a specific time period every project requires cross functional participations of all other groups. Suppose if you are developing a product.

So, it is not the job of R and D alone or the engineering or operations group you also need the participations from marketing people, finance people, logistics people, engineering people. So, all those the integrated things are required. So, it is required the multidiscipline participation and every project is unique no two projects are the same and

all projects have a specific time to complete specific budget or cost to complete and specific performance that is your required performance are given by your clients that you have to do. So, these are the major characteristics of a project. Next further we will be going.

So, what is a program? Most of the time what we do that projects and programs are used simultaneously. So, they seem to be   synonymous, but it is not so. A program is a group of related projects undertaken to   have a broader and common goals and the main difference are that for these programs the scale is much higher, time span is higher and its goals are higher, those are the called programs. Suppose you are connecting two cities with a highway, say from Bombay to Delhi or Delhi to Calcutta. So, these are specific project connecting two metropolitan cities.

Now, if you take golden quadrangular   program what happens, the four metropolitan cities of India are getting connected. So, these are a program. So, group of related projects makes a program. Suppose you wanted to increase your production level of your factory. Suppose you are producing now say 100,000 cars and you wanted to increase it to 500,000 cars.

So, that may require many   types of projects, like it may require production enhancement, then the project logistics   enhancement or it may require other infrastructural supply chain management improvement. So, these   will be a program. Suppose you are constructing a refinery. So, refinery consists of several projects. C2, C3 plant, maybe the diesel plant, petrol distillation plant, then maybe NAFTA those are the number of projects that makes a program.

Similarly satellite, suppose if you are doing a satellite launch it is a program because it consists of many common projects. Similarly if you wanted to make a nuclear submarine it may have many main things like nuclear power plant, then the submarine framework, then the other marine projects and all. So, it is a program. So, now, I think it is clear what is a project and what is a program. Next we will be coming into the differences between project, program and portfolio.

So, we have seen that the programs are a group of related projects having common goal with a larger time span and larger in scale - that is programs. Now what is portfolio? Portfolios are the projects having varying characteristics and   varying the goals. The characteristics and goal may be different like portfolio maybe infrastructure building projects, it may be the production and some projects may be the production improvement project, some may be the safety project, some may be your next generation strategic project. So, their characteristics their Goals are different. So, these are the portfolio -

projects which are having varying characteristics and its objectives are different are called portfolio.

Next which is what is the difference between a project life cycle and product life cycle? Before going for the difference first I will inform you what is a project life cycle. This is called a project life cycle. Generally speaking the most of the projects most of the company's experts defined it to have typically four main phases. These are called the define phase, planning phase, execution phase and the closing phase. These four are the phases typical to a project, but some companies may have five phases, I will come to that bit later.

What is this define phase? Define phase is here you broadly fix your objectives, what is the project objectives, what is the goals of the project. Then you define the specifications of the project, what will be the outcome, what will be the requirements of the clients, what will be the final design - those are the specifications broadly you define it. Then you make teams and distribute the different task to different teams or groups and assign the responsibilities, the responsibilities to the different groups or responsibility to an individual. So, these are broadly done in the define phase. Then the next phase is called planning phase.

This is the detailed planning of the project like you make out the detailed time estimates required for the project, detailed activities that has to be carried out for the project, the detailed costs, the budgets that will be required that you come out for the project, detailed resources that will be required, resources in the sense your manpower requirement, your expertise requirement, your material requirement, your equipment requirement all those you have plan it in detail. Then the risk you find out - the risk analysis and what are the risks of the project. Then the staffing needs, what are the manpower, what are the expertise, what are the experience you require, either you hire it or you develop it by training your own people. So, these are the detailed planning level. Then the third is the main thing - execution or implementation of the project.

In this you are actually executing. So, you have to monitor the project, you have to take the status reports of the project and inform the higher management or inform the client side because that is very important, you have to update it and if the status reports are not as per your plan you have to take the correction like mid-course corrections. So, executions also require the changes. When you implement the project what happens like you can see the changes may be necessary because of some new things has come out and all some new technology has come out, new other things has come out the changes may be required. So, that you take the any changes that is required. Then quality that is whether your projects are as per your performance standards that were specifications

given is it at per that or not that also you have to check and based on your current execution level.

So, you forecast what will be the final cost of the project, what is the final durations of the project you have to forecast that depending on the current progress of the project these are the main task for execution. Then the last part is the closing of the project means you are ending it. So, here what you do you have to hand over deliver the project to your clients to your customer. So, before delivering what you have to do you have to transfer lot many documents because a project is a contract and this has been done in a contracted manner. So, this you have to transfer the documents then you have to train the customers or your clients people employees because they will operate the project after you hand over.

So, you have to train them then you have to release your resources because your resources your equipment your manpower your materials those you are not requiring when you are closing it. So, those resources should go to some other projects of your project next project. So, these are the you have to release resources then you have to evaluate your project how did the project went you have to evaluate as per your plan whether it has gone nicely or something went wrong. So, you have to evaluate the performance of the project and not only project that also for the project team members. Then lastly is the lessons learned what went wrong.

So, that you learn the lessons to not to make the same mistakes in the future project what went right. So, that you adopt those practices in the future these are the project life cycle. Now, my question was what and this is also if you find it the project life cycle it can also be some companies some experts they put it as a phase 1, phase 2, phase 3, phase 4. Phase 1 is the feasibility or the or the define phase, phase 2 is the design or the planning phase, phase 3 is the implementation execution phase and phase 4 terminations or the closure phase. But many companies use only not only 4 phases 5 phases also I know some of the major companies they introduce one more phases like instead before define they also put a phase called appraisal.

So, it becomes a 5 phase and also if you see software projects and all they also do it 5 phases say the feasibility or define after that they do the coding, coding then they do the testing and the integration then they do the execution and the closure or the delivery. So, these are the different phases different companies use it. Now, my question was what is the difference between project life cycle and the product life cycle anyone of you can tell. The difference is project is a temporary end-upire it creates a product or service or result and then if the project is done, it hands over to the product team, operations team, then operations they carry it out to their products life cycle like it happens like this, I

will show you. What is a product life cycle? This is the embryonic, this is called embryonic stage, this is growth stage.

So, this is the mature stage, this is the decline stage, this is called the product life cycle. The project is here you are developing a product. This is the R&D and all. After you develop a product you hand over to the operations. Operations then take it from its growth phase mature phase then it will go to the decline phases.

Then another product you may have to develop. So, what we can say, the project life cycle is the subset of the product life cycle. Product life cycle is longer that is the utility of the product that grows from the project to growth stage mature stage and decline stage. So, this is the difference between the project life cycle and product life cycle. Now, next we will be talking about what is the role of a project manager we say we say functional manager. So, what is the role of project manager? Project manager is very important all of you know that though actually project managers jobs are temporary because projects are temporary in nature and projects are not repetitive.

So, the project managers are also non repetitive and project manager acts independently because project manager is given a given a what project manager is given a task a project to be completed. So, he has given some delegated power and the charter of power is given to him. So, he acts independently, but when the project is finished the project manager goes to some other project. Whereas, in the functional manager he presides over the existing system system existing function say HR function or the finance function engineering function logistic function R and D function.

So, those functions are existing continuing. So, functional managers jobs are routine sort of thing, but the project managers are acts more independently and these are temporary in nature. Then there are project manager has to marshal its own resources he has to get the manpower he has to get the expertise, experts then the equipment material. So, all those things are required. So, he has to marshal it then he project manager is the main person with the customer interface the clients the clients you have take the heat of the clients or you interface with client they have to are the maintain good relations with the customers. Then project manager has to direct his own team, he has to coordinate the activities of his project team and integrate he has to make a cohesive group to complete the project.

So, direction, coordination and integration of the team are another job of the project manager. Then project manager has to get the support of the his peers the other functional managers and he have to get the good relationships with them. And project manager is responsible for performance and success of the project and it also he is

responsible for the failure of the project. So, these are the duties of the roles of a project manager. So, project manager must induce right people at the right time to address the right issues and make right decisions.

These are the basic roles and duties of a project manager and these are the difference between a project manager and functional manager. So, to sum up the this lecture the conclusion we come that project approach has become the way of doing business in the present day business world. This we have discussed is this introductory module has also discussed the evolution of the project management, growth of the project management and importance of project management in the modern day business. It further explains the characteristics of project program and portfolio. We also discussed the project life cycle which has the typical phases like define phase, planning phase, execution phase and closing or delivery phase.

And we have also discussed the role of project manager for successful completion of the project. So, these are the some reference book you will can follow these are the good books the top books in the world. So, first is by the Gray and Larson project management, then the project management by the Jeffrey K Pinto, then there is a project management management managerial approach by Meredith and Mantel, then there is project management for business and technology by John Nicholas. So, these are some of the references books you can go through. Thank you very much for attending the lecture.