Project Planning & Control

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Lecture - 01

Introduction, Course Context, Construction Project Management

Welcome everyone to this class. This is a class on Project Planning and Control, and we are recording this along with the students of the dual degree batch in Building Technology and Construction Management, who were taking it as a course. So, these are the students, who will be participating with me in the classroom, and this first lecture will give up basic Introduction to the Course and the Context of the Course.

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So, we would first look at the learning objectives. What we have today is, I would hope by the end of this class we will be able to define, what project management is to all of you, understand the science of project management, understand that there are standards with which project management is managed, and we are able to get a better understanding of, what the standards are and actually, then going to the scope of what the course does and the plan for the class. So, this is really the learning objectives for this lecture and let us gets started.

So, I would like to set the context of the course first and for this, I would like to do it in a little bit of a discussion base mode and the first question, which I want to ask you all is, what is project management?. What do you understand by project management? Management of

resources, what else?

Student: People scheduling

People scheduling, cost, what are the other topics that come to mind.

Student: ((Refer Time: 01:56))

So, you have cost, but up to the management of the… So we are using the term management. What does the term management mean?

Student: Should be an optimized allocation of resources and…

So, now, I am coming back to this term, we will design management and in project management, management is one of the function. So, let us take probably the definition of management a little later. What is the project?.

Student: undertaking a task.

Undertaking a task… So, I decide to undertake a task of let say making cars. Is it a project?

Student: depending upon the.., it should be unique.

It should be unique, so the keyword which we are looking first unique. So, when we talk about project management, it is really management of something unique. Is that okay?

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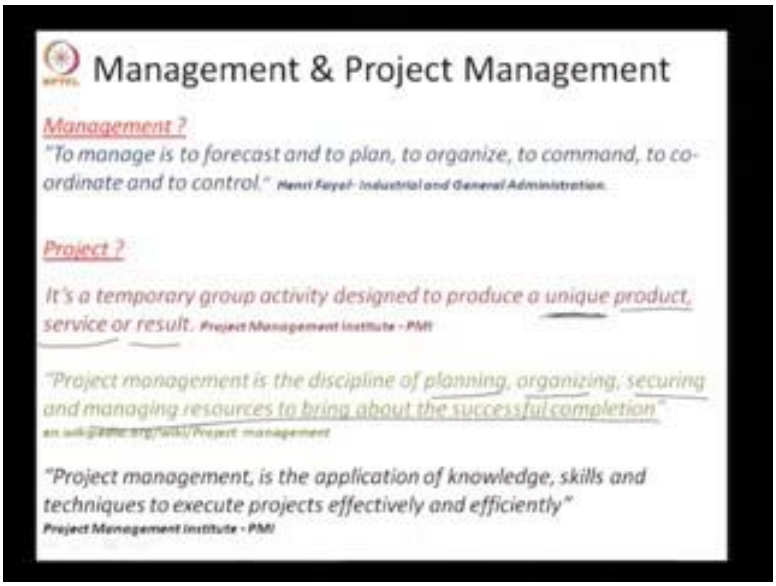

So, when we talk, so I want to now continue and kind of get to the general definitions. So, what you will see here is when we I do not want to go and ask you on the definition of management because there are probably over 1000 definition of what management is. And I

will just take you know one of the oldest definition, which was put forward by a person, who was one the fathers of management from a French origin and it is to manage it is to forecast plan, organize, to command and coordinate and control. So, this is how he defined management.

Now, when we come into the project, so we want to be able to forecast plan, organize, command and coordinate and control, we can do that in any many contexts. When you come into the context of the project, the key is that it is temporary, just as you all mentioned it is temporary it is unique. And it is temporary, so if you look at this definition, now the definition of a project is, what you say less common and one of the most accepted definitions of a project is what is put forward by the project management institute and this is, it is a temporary group activity designed to produce a unique product, service or result. So, the key word here is again it is unique.

So, remember it is a unique product, unique service or unique result and another way of looking at the of, you know very popular wiki resource is project management is again discipline of planning, organizing, securing and managing resources to bring about successful completion. So, what I have done with here is combine the definition of management with the definition of the project, you know I have taken this particular definition because it nicely combines this both together.

If you go to PMI's definition of a project it is a little broader, what it shows in project management is the application of knowledge, skills, and techniques to execute project effectively and efficiently. So, the take away from this is that, when we look at project management is management or something unique and whether you are, you know and when you look at what is management we are looking at planning, organizing, securing, managing resources or you know command, coordinate, controls all these verbs we can use it with doing something for taking about a unique activity. So, I think we have a good understanding now; project management is something which is unique, then what is the management of something that is not unique, process management.

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So, that is, so we come to this comparison between process and project management. So, if you take to process, it is something that is not unique and most of us away involved in processes or in the project. Generally, industries involved in the process, they are doing things which are repetitive. So, a lot of what industry depends on today is repetitive. Can you give me examples?

Student: Assembly lines.

Yes, assembly lines. So, you have car manufacturing. Anything else?

Student: Food.

Food, you know a lot of work, you know Hindustan lever will make all your food package, shoe package, everything is the processor. You know you have the person who makes a cell phone, Nokia make cell phones, it is repetitive. We will come back to whether Nokia is, how repetitive is Nokia cell phone, for how it repetitive with Apple iPhone, will come back to that, so let say electronics.

There are so many aspects of the process and with this, we can understand it is repetitive, a lot of the service we encounter is repetitive. I go to the bank, the teller or whatever service, many customers come to the bank for the same service day after, day after day it is repetitive. So, for example, bank it is a repetitive process. Anything else you can think of.

Student: Conducting an exam.

Conducting an exam is it now, so that is an interesting one. Is it repetitive or is it a project or

repetitive? Conducting JEE exam every year, is it a project or is it repetitive.

Student: There is a protocol.

There is a protocol, but there is… So, how unique is it? There are challenges. So, I would like to explain on that example, quiz 1, quiz 2, quiz 3. Is that more of a project or JEE more of a project?

Student: JEE is more of a project.

JEE is more of a project. So, what I want to highlight here I want to do this later, but the opportunity is come up now, there is now we cannot start classifying everything as a pure process or a pure project. You are going to find that there are things that are in between, there are things that are partly I mean like this exam example, some of some in. Some quizzes, which are done on an everyday basis have more of a process, we do not think about it, we delegated; I mean systematizes when it a process. JEE by most standard it is a project.

So, we let see now, let us look at examples of a project, what are the examples you can think of projects. Construction our favorite area, yes events.

Student: Events, genome.

Yes, genome, why do we call that a project?

Student: All research and scientific things.

Yes all research and scientific things, so it is actually research.

Student: Even development is a project, I mean…

Yes, research and development is a project. So, if you get a project, we take projects like when you do an M.Tech project, it is a project, because it is a single activity which you are going to take.

Student: ((Refer Time: 09:17)) policies

Yes policy making very, very high level, it is a project. So, for example, presenting the railway budget for a year will be almost like a project. Aadhaar card, it is a project it is a… So, you have an idea of what are these aspects which are unique. Now, just to reinforce what we have discussed classic repetitive process are assembly lines, manufacturing a car it is repetitive, it goes on doing the same thing over and over again only if the model changes, there is a change.

You know this is classic process go, it is so process oriented, it is so highly automated that it just goes on without almost no human interaction. Now, when and we can go on with the examples like this, so one thing which we have to understand or the reason I introduce this is we have to think when I take up a task is should I do it in a project mode or in a process mode. Coming back to the quiz example, if I going to do exam or quiz, I am going to quiz 1 and quiz 2, quiz 3 or even in final exam of the semester it is a process mode of thought.

If I am going to do, you know joint entrance exam conducted it is a project mode of thought. So, we have to understand how, what the endeavors are. When we take projects, you can recognize this; this is the Bandra-Worli highway the bridge. Now, something construction again DMRC, some non-construction example research is a project, software development is a project. So, this is one of the areas of project development, project management that has got a lot of focus today, because of the so much of software that is started coming out and a lot of tool with project management has been associated with software development.

And when we talk about research, for example, development of a space launch or you know DRDO decides the new BrahMos, so which is a project. So, again to kind of repeat you have to think now of where we need to use project base thinking, where we need to use process-based thinking.

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Now, I want to come back again to this, so I think we have answered the question, what is project management? In looking a process and project we discuss that thinks need not be purely processed, thinks need not be purely project. So, this in between line has been think is

getting more and more blurry in reason times. I will take the assembly lines itself was an example it uses to be we saw the Ford assembly one of the first assembly that it use to be that Ford would probably put out a new model of a car once in a year a once in two-three years are even later.

If you came if you take the Indian context the ambassador car was one of the locally made first you we would probably get a new version of ambassador every 3, four years effort on, on that to they would not be major changes. How is the automobile industry today?

Student: It fast the evolved.

It fast the evolved. So, what is the project part of the car, what is the process part of the car?

Student: Process as the manufacture.

A process as the repetitive manufacture.

Student: The project needed to go behind, there is nothing will new ((Refer Time: 12:48)).

New modifications are putting out the new prototype, finding out how it is going to. So, new product that comes out is in a project mode after comes to project goes into a process mode and use another example I take the cell phone industry or the smart phones, how often does I mean again you are looked go back into the past you would probably change your phone I do not know, how often you have to change your phone once in 2 years 3, 4 years 3 years I had 6 months 9 months 1 year I am sure the variation is there in the group.

But, it would be that you got off phone, and you held on to it for many years before it changes, but today the models itself do not permit every is 6 to 8 months, where iPhone comes out every

Student: 8 months

Eight months nine months they get so. So, now, again we are come to a cycle where the process of making an I phone as is done in China and it is process sized, but the product of the new I phone is a project. So, many companies find that now they have to be both and project management mode as well as process management otherwise they cannot be successful.

So, that is the core difference today that is one of the reason is why project management has really taken off. The concept was people need to understand the concept of project management. Now…

Student: How could you classify supercar industry. For example, each car is though the model is same, they are customized to the…

So what is happening, so if you actually go back to the car industry, what Ford did was bring the assembly line before he standardized. Before Ford, it is used to be customized. Now, can you make a car in the customized mode today without technology no? So, what happening is the customization is basically a result of technological development. So, again now, as we see the project, process, project, process the line is blurring, but with technology being more enhanced we are able to do project faster process go back into project mode go back into the process.

So, one thing that is really pushing the project capability is technology. So, I will give you some basically I mean from what I understand you are saying if a customer wants a customized car the industry able to deliver because the robot that making it can be a program to customize as per customer requirements.

So, that happening to something like for example, shoes even now if you go to the shoe shop you go and to any I say buy a shoe 10 or 10 and a half, and I buy it and hope fits me perfectly is that that is the standardized way of shoes right. What would be the customized way of the shoe?

Student: ((Refer Time: 16:08)) enter the size.

Why size is not your shape of your leg, size is only a standardization of your leg. What would be the customized way of doing it?

Student: We do not know the size of the leg length and breadth I give.

So, I could take as a laser scan of my leg and send it over the net to this factory. They read the scan they would be able to make a shoe exactly to fit my leg and send it back to me possible, because of technology. So, now, the project, so if I have to do it with the shoemaker a, it will be a project for him, where you would have to measure my leg and you know there is actually do that in this today it is in technologies enabling and blurring these lines.

So, there the project mode is almost process sized fully, because of technology any other question. We move to the next question again in the context I assume in some places you would have heard this what is project management and specifically is project management an art or a science

Student: a bit of both

bit of both. So, if it is a bit of both is it more of art or more of science?

Student: As engineers, we having it is more of science.

As engineering, you would be wanted to be more of science that.

Student: use to be more of art in the earlier time spend now, string methods and procedures to follow and now that we have more and more procedures like methods to do project management we have more of science.

So, more over science, but if I want to say divide art and science between 100 percent what is it where is it where is art what percentage is art what percentage is science management.

Student: Optimization and optimization come from the mathematics. So, it lies in the field of science, so it is all management now.

So, is all management science know what I am saying is you want to manage a construction project I mean optimization is a part of the whole thing I want to successfully bring in a project is it art is it agreed it art and science are it more art or more science individual a project or project, project it is more optimize. So, it is it is far enough to have this debate on more art or more science at least with all discussion I had with industry and people in practicing people especially in construction project there will say still more of art. The science is since developing like you all are saying there is science, but it still developing and we still have a long way to go okay.

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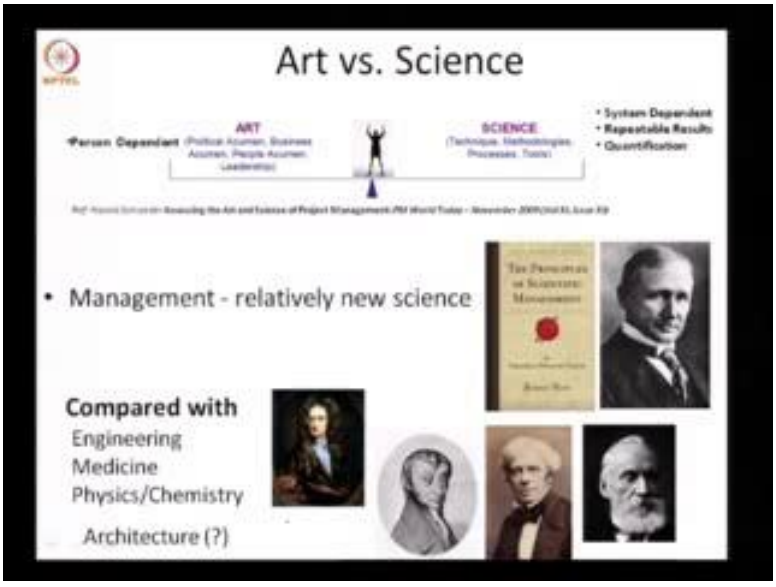

So, let us take at this in the context of art verse science. So, you can see we what we need to

do if you take art what are the aspects an art you know you have political acumen and business acumen, people acumen personal you know interpersonal skills, leadership, so all this an art and the science sides we have techniques, methodologies, process tools okay you have to balance both, and you go to the art side is a person dependent if you are good at the art of project management it doesn't mean that I can repeat what you are doing.

So, you need that project manager who is a skilled project manager who has a lot of this capabilities to bring in a project, and if you go back, and you know to the earlier time that was what made you a good manager or whatever it is, it was an art. When you are going to the science side, you do not want to be people dependent; you want to be a system dependent you want repeatable results. So, repeatability is one of the pillars of science and quantification even mathematics only if I can see one another way looking at science if I can quantify and I can make it you know to express it numerical form then I am being more in a science-specific not necessarily mathematical.

But, it is one of the pillars the other is certainly repeatability I might have rules which are not mathematical, but if I apply those rules, I can always get the same result that is good enough that is still science I am not person dependent I am not totally heuristic and person based. So, this is where we look. So, we understand you need a balance, and if you look at management, it is a relatively new science. So, you find there is an area called management science there are journals called management science which really looks at management from a scientific perspective and when you start looking at it from So, if you looking at actually go back this is a Taylor, whose principles of scientific management was the first book that started I mean the book which we are all know there are before Taylor there were people who where you know practicing science, but they did not make it publicly as I mean it is not as publicized as Taylor's work. So, if you look at look at his principles you see that he started measurements based on measurement thing started decision started being implemented and like is this was in the early nineteen hundreds.

So, that is one management science we can start now when you compare management science. So, what we need to know is now we see. So, now, we agreed the science and art role, but this will be become more apparent that is more of not when you compare with somebody other disciplines. So, let us say you compare the engineering, I will take a very I mean most of you are in I have taken a lot of courses either in structural engineering.

So, structural engineering art or science?. it is much more of science there is art unit, but

certainly a much more of a science okay, there is no doubt about it. But, if you go back a few hundred years was structural engineering art or science?. we needed a master builder be able to put it in a way you make it stand he knew it, if you didn't have him you didn't have the structure today it doesn't matter whether I mean we can train you to be structural engineers and practice most of the structural engineer repeatable you can make structures in style.

Another thing is something that science can be taught in the classroom like this, and that is the objective you take medicine art or science, was an art more of a science some might argue too much of a science and you really need the art back to be able to do, but again there is a balance of art or science, but we see a lot of science in medicine of course, you take pure sciences, it is all science okay. But, where did all this start? So, I mean I have taken pure science because we have a look at some names who is this Newton.

So, what is Newton do to make the science his loss of motion and everything else started to quantify force equals mass * acceleration we did not have any I have that forms the basis of many apps of mechanics and science. So, you know the quantify that made it into a science. Avogadro So, again his number started making things scientific. Faraday as for as electric goes he is one who made things scientific. Lord Kelvin. So, all of these people were that many, many years ago and starting making physics and chemistry more science than art.

So, we are now in that face what management is trying to be made a science we are still more in the art form, but we are trying to make it science okay, and that is the face we are in. Okay let us take architecture close to our area should it be an art or should it be science?. It should be an art. So, will be leave that for discussion you can go on and about it should be an art, it should be science do it without science there are limitations if you do it without art. So, so certainly we do not want to fully science. It should be more art or it is something like art itself should be an art should not science anyway, so that is an interesting point to debate.