Project Management: Planning, Execution, Evaluation and Control

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Welcome to the course Project Management: Planning, Execution, Evolution, and Control. I am Professor Sanjeev Choudhary from the Indian Institute of Technology, Kharagpur. We will start today a new module called Module 7, which deals with project risk management. In this lecture We will be covering managing risk and risk identification. To start with the concepts that will be covered in this lecture are risk management processes and risk identification. Thereafter We will do the rest of this module in the subsequent lectures.

So, these two, we will be covering in the next half an hour. So, let us have some basic concepts of risk management what it is saying. So, what is a risk? I understand that everyone has the concept and everyone knows what is a risk because risk is all pervasive and it is there in everybody's life, and in every step and in every corner, it is there. So, all of you know what a risk, but to articulate it, can anyone say what a risk is? Can anyone define what' a risk? I will explain.

A risk is an uncertain event or condition. If it occurs, then it has a positive or negative effect on the objectives of the project. So, mind my definitions I have described positive or negative effects. Usually people ask me, sir why it is a positive effect is a risk. Any uncertain event or condition has a positive outcome if it occurs may have a positive or negative effect.

A positive effect is called an opportunity. We will deal with opportunity later on, but now we will be dealing with the negative effect and that negative effect is called risk. So, if there is any risk, when it happens, it has a cause and consequences. So, say someone is attacked by the flu. So, this is the cause, what is the effect? The person may be down with a fever.

Similarly, the project scope changes may be the cause effect will be the slippage of the schedule or the overrun of the cost. Those are the are the effects. So, every manager and every project specialist know that every risk has a cause and its consequences. Some risks can

be identified easily, some Before the project starts, say that one can foresee the risk of equipment malfunctioning or the inclinations or the bad weather. These are the things you can foresee, but some risk cannot be anticipated.

So, this and no amount of planning can make you 100 percent risky. free. So, no one will guarantee you that it will be 100 percent risk-free. It is not possible because we human beings have limitations; all of us know that. So, what is risk we have described.

Now, what is risk management? Risk management is the systematic study of risk identification, risk assessment, and then developing risk response plan that is strategizing, controlling the damage, contingency planning, and the risk response control. All these things systematically done will give you the risk management. So, so in what are next point is what are the benefits of risk management? Suppose your organization do not have a risk management, then you are more vulnerable when the risk happens you do not have a plan you are more vulnerable. So, the benefits of a risk management are having a risk management you are proactive, proactive in nature. So, you have a plan.

So, to meet the any eventualities when the risk happens. So, the managers and the project team will not be surprised at certain occurrence of any eventualities. So, the and it also controls the controls the negative consequences because you are better prepared to face it. Project manager and the project management teams are ready for it better prepared for it to face the risk and it also enhances your control over the risk because you are you have a plan with you are. So, and it also enhance your performance of achieving your goals.

What are the goals of the project manager or project team? Goals are to complete the project in schedule time and within the budgeted cost and with specified specifications requirements. So, all these things will be easy to meet if you have any eventualities because you have a plan to make. So, risk management is proactive in nature rather than reactive. So, these are the benefits of risk management. Now look at this graph and what do you infer from it? Can anyone tell what does this graph depicts? If you see it this graph is the here is the project life cycle and we all have discussed before in module 1 that the project has typical project has 4 phases or cycles that is defined phase, planning phase, execution phase and the delivering or closing phase.

So, the this is the risk chances of risk occurring chances of risk occurring at the beginning of the projects are high, but the cost of mitigating those risk are very low as the project progresses to its to its life cycle approach progresses to its completion. You can see chances

of occurring risk are less are coming down, but if the risk takes place then the cost of the risk will be very high say define and planning phase. What are the chances are very high like it is the estimation risk, design risk that schedule risk all those the cost risk those things are chances are high at this point of time, but rectifying that is very cost is very low, but as you enter the project execution phase execution phase you start constructing your plant or your project? So, at this time the chances of risk occurring is less because you have done detailed planning detailed planning and all that that has passed few gates then it has come here chances are less, but if that occurs that you have to redo the work. So, cost is high similarly at the closing stage chances of risk are less, but if that occurs the costs are high.

This shows so, I will give you an example like NASA's you know the Mars climate orbit that the that satellite that space program was there and that was had a disastrous effect why because they are the ground control computer and the spacecraft computer those were the designs were done by the by the Lockheed Martin, but they bossed up the plan and what happened the both this computers you know the measuring the thrust you know these were different units one was in FPS that is in pound thrust was measured in pound per square inch and the other one the spacecraft computer that was in MKS that followed the thrust as Newton. So, this was not detected by anyone and that was the cause of the disaster when it entered the Mars low level and it got burnt up. So, these are the say at the at the end and all the cost was huge. So, this is the risk event and cost relationship clear. Next, we will be discussing about risk management process.

What is a risk management process? Risk management process consists of 4 phases and this is the slide is the heart of the risk management. These 4 phases are risk identification, risk assessment, risk response development and risk response control. These are 4 phases 4 steps rather. So, step 1 for risk management process is risk identification. In this lecture we will be discussing the risk identification.

In the next lecture we will be dealing with risk assessment. Then subsequently in subsequent lectures we will deal with risk response development and risk response control. So, so let us discuss how to identify this. So, how do you identify this in your organizations? So, different people give me different views. So, first thing I will tell that first thing is you do the initiate brainstorming.

Brainstorming among whom? Brainstorming is not within the core team alone that risk management core team they may brainstorm among themselves, but best is you take every group from the organization internal groups. So, all groups will participate and they should brainstorm, because risk related to different groups they are more aware of it. They can give have a better insight how to identify and deal with those risk. So, risk identification first

thing you do a brainstorming among all the groups internal groups of the organizations and not only that it will be much better if you involve many more stakeholders' important stakeholder such as supplier, vendor, your customer or clients, then regulators or your partners. If you take everyone views and all brainstorm it will be a very enriching experience.

And when you do a brainstorming that rule all of you know you should not discourage anyone. However, that he gives a say foolish idea or the ideas they ideas they propagate may seem to be outlandish, but it has been observed those outlandish idea may prove most important ideas most important risk. So, you should encourage everyone to participate in the brainstorming and try to note down as many risks as possible is coming out from the from the different participants from different quarters, different groups, different stakeholder. Then in the second stage you start screening those ideas you may find those pre-proestrus ideas may become the most favourite things for the to choose. So, the next you do the screening processes and take and make a shorter list of potential risk.

Then this is the brainstorming, then you can also do the risk breakdown structure similar to work breakdown structure like risk breakdown structure like organizations breakdown structure you can break elemental breakdown of the can-do elemental breakdown of the of the risk. This is an illustrative brief risk breakdown structure this is the project, project can be divided into main say technical areas, external areas, organizational areas, project management. So, project management may have different risk further you break it down say estimating risk, planning risk, controlling risk, commissioning risk. Similarly, you can go for technical further subdivisions say technical requirements, technology risk, conceptual complexity and interface risk, performance and reliability risk, quality risk and further under each you may get many dozens of risks you can break it down. This is one way for getting as many risks as possible then you screen it.

So, and you can link this risk breakdown structure with the organization breakdown structure also this is a good practice and mostly if you have the similar projects in the past and all it will help you to have those risk breakdown structure because you have fair ideas what happened in the past. So, this is the and one more thing when you do the risk breakdown structures and all first there are two types of risk you know there are two types of risk if you see there are macro risk and specific risk. Macro risk are the high-level risk you always deal the high level or the that is the project level risk first then you come the specific risk. What is the project level or the macro risk? Suppose the after discussions project team finds out there may be a risk of funding of the project funding of the project may be slashed down by 24 percent or 25 percent after the project starts that may be a risk that is you identified this is a macro risk like if 20 percent or 25 percent of the project fund is reduced or cut after starting of the project your downstream activities will be affected. So, you deal with that high level

or the macro risk first then when it is done you come to the specific risk that is the downstream risk those are.

So, those are those are easier than that to deal with and also it makes a sense for the prioritization. Then you may have risk profile you can develop a risk profile for this what is risk profile? This is a partial risk profile of one of the projects say product development project. So, here what you do? You develop a checklist a questionnaire about the happening of the risk about the risk on different dimensions and these you prepare this questionnaire are generally prepared on the experience of the past project. If you have done similar projects in the past you can have your lessons learnt and all. So, you may develop such a questionnaire or you can the help of the experts also the to make such questionnaires and this covers generally the different domains different aspects of risk like technical requirement, design requirement, testing, development, schedule risk, then budget risk, quality risk, management risk, work environment risk, staffing, customer all these areas you develop your questionnaires and find out their current project you're the project you are in going to execute whether it has those risk or not that will be a guide to you for identifications of the risk.

So, this is the risk profile that you generate based on your organizations past experiences. Then there is some risk which are external risk you know this external risk are can you give some example? These are generally saying inflation regular that change in government policies then your fuel price high then the material price goes high goes up exchange rate goes unfavourable. These are the external risk project manager or pro or project team the or the organization does not have any control on it you have to accept it these are rather called threat to your project threat to the environment. So, these risks are also you must way you must be aware of it although you do not have any control to it, but your project will be affected by it. So, you have to take some measures to overcome or mitigate such risk.

So, these are the external risk when you identify the risk common the com there are many common mistakes you make you means the people make. So, one of the mistakes for identifications of risk is made is people go for the objective they identify and identify the objectives not the events that is causing the risk. Suppose the you're the company or the organization could not fulfil it stay its planned schedule was not fulfilled. So, that becomes a becomes your you identify that as a risk, but what the risk will be what is the event causing that non-fulfilment of your schedule cause if you look at the at the event and find out the root cause may be your poor estimation or bad weather or shipment delay. So, those are the root causes you should identify the risk those risk and take preventive measure.

So, that it does not record like for the for poor estimations you make the estimation system more reverse for the future then for the for the shipment delay you make necessary arrangement to reduce those delay. So, these are some of the common mistakes for identifications of risk. So, next we will be going for the after this partial we will going for the risk assessment before that I will end up this what we have discussed so far in this lecture are the to summarize it these module deals with risk management process and explains risk is an event or conditions if it happens has a negative or positive effect on the project objective. The module also describes risk management process and its benefits. This chapter also discusses how to manage risk in a systematic way the steps in managing risk starts with risk identification followed by risk assessment risk response development and risk response control.

Risk identification process has been discussed in detail in this lecture and in the subsequent lectures we will be dealing with risk assessment risk response development and risk response control. So, these are the some of the reference books you should go through and enhance your knowledge on the risk management further that will give you a better and overview. So, thank you very much for attending today's lecture.