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**CHAPTER 7 (RISK MANAGEMENT)**

Everything we do in life involves risks. Risks are bound to occur during a project, it may occur at any part of the project some are associated with specific tasks and others can be external, they may manifest without a sign or warning. When risks occur toward the conclusion/end of project it will cost more damage and more to fix, unlike if it should occur at the beginning it can easily be rectified. This is because with time there is more to lose.

When carrying out small or already existing projects, you might need some attention on risk management since it can easily be covered as it has already been done before. However, for new projects or complex projects, risks management strategy must be drawn out to identify all possible potential risks and how to address them. A risk manager is required for large projects to ensure that the management strategy which has been drawn out remains valid and that time goes by everything is still in place. Project risk management is a complex subject. The classification of risks is not straight forward and can be approached in different ways. Some of these techniques may involve other management disciplines. These techniques will be stated as we go on.

In many cases some tasks may not be completed in line with their durations or budgets estimates. Some may exceed their estimate while others may not use up all of theirs. Monte Carlo analysis can be used to attempt an assessment probability of the project finishing at a particular time or of a number of a given resources. These measures are based on uncertainty and not risk. Risks are most times unforeseeable event that may result in change of plan or failure. Risk can occur at any time it maybe an accident waiting to happen. Risks may occur before the project, at the early, later into the project, towards the end or after the whole project. The first problem of the manager is to identify all possible risks that might occur during the course of the project development and after. The manager should study similar already existing projects and learn from the mistake of others. A brainstorming meeting of key staff is productive method of identifying all risks, where all idea no matter how bizarre or ridiculous, will be recorded for further assessment.

The recorded risks should be organised according to the probability of their occurrence and severity of their impact if they should occur. This analysis helps to identify possible causes and effects of every risk. The risk analysis maybe Qualitative, which will involve considering each risk in a purely descriptive way to imagine various characteristics of risks and the effect it may have on the project or it can also be Quantitative, where the outcome of risk or to attach a numerical score to the risk according to its perceived claim for preventive actions.

Some qualitative causes and effect analysis are; Fault-trees and fishbones, Failure mode and effect analysis (FMEA) and risk classification matrices. Fault-trees and fishbones, are commonly used by reliability and safety engineers to analyse fault in design and construction the diagram illustration is like that of a fish skeleton hence the name. The process gives an effect then shows possible causes. FMEA, this considers possible risk events, and then proceeds to predicts all possible effects and what remedy/solution should be recommended. Risk classification matrices, each risk item is considered for its likelihood/chance of occurrence and the relative scale of the impact on the project if it should occur.it is a simple for four section matrix.

Quantitative analysis on the other hand attempts to assign numerical values to risks and their possible effects. It examines the probable impact on the project the time and cost. Prioritize the risks in an order that would help claim management attention and expenditure on preventive measures. Results are based on estimates, assumptions and human judgement. A method is the Failure mode effect criticality analysis (FMECA), it show the chances, the severity and the level of detection/ prediction which could be measure in degrees for instance scale of 1-5.

A risk register is where all potential risks are listed. It can also be referred to as a risk log. This contains; an ID number for each risk, the risk itself, the causes, the effects, the chances, the severity, detection difficulty, total ranking, action performed by and measures to be taken if risks are to be materialised. Some of the methods of dealing with risks are; Avoid the risks, Take precautions to prevent risk impact, Accept the risk, Share the risk, Limit the risk and Transfer the risk.

The financial impact of many risks can be reduced by insurance. According to the FSA, a policy holder should know what will or will not be covered by the insurance. Some categories of insurance are; legal liabilities, protection against loss/ damage of property, cover relating to personnel and pecuniary loss. Legal requirements oblige companies to obtain adequate insurance cover against some risks. There are risks that must be covered by insurance (Statutory requirement and Contractual requirement), risks that can be covered by insurance (Management choice such as risks involving loss/damages of tools and equipment, pecuniary loss through an unforeseeable cause or health insurance) and risks that cannot be covered by insurance (these risks must be accepted by the customer or the contractor). Insurance can often be of great benefits in reducing risks especially in areas involving health and safety, so it is important that a project manager involves an insurance specialist at every stage of the project.

Special crisis management contingency plans should be put in place, in case of an unexpected disaster should strike. One can never tell when disaster will strike, but plans should be made so they can be implemented if peradventure a disaster strikes. There should be a selected group of people to draw out a contingency plan. The elected committee members should be able to use their imaginations as what possible disaster could strike and what given time. Some things that should be put in consideration: the location, climate or weather of that location, the most likely natural disaster to strike and many others. When plans are mad and tested they must be documented and incorporating all the lessons learnt during the course of this project.

**CHAPTER 9 (PROJECT ORGANISATION STRUCTURES)**

In an effective organisation there are clear lines of authority and every member of the project will know what they are supposed to do ensure project success. A well-motivated groupcan be a joy to work while a poorly motivated group, is slow achieve result. The complement of good management communications is the provision of adequate feedback paths through and across the organization. These facilitate cooperation and coordination. They allow progress to be monitored and difﬁculties to be reported back to executive management. They should also give all participants access to the relevant experts for advice or instruction on technical and commercial difﬁculties.

Organisational charts helps in understanding. The chain of command, the jobs to be done and the communication channel between each section/department/group will be shown in the organogram. This organogram although it may have a very advantage, it also has a shortcoming. There may be some informal lines of communication will not be presented of this chart and incapable of defining every subtle influence that one person will exert on another. Whenever a there is a change in the organisational chart it means there have been organisational changes and these new charts should be distributed. Organograms despite their shortcomings are the most practical ways to show organisational structure.

Organisations of this type are known as ‘line and function’, because they are set up to manage work within departmental (functional) boundaries or specialist disciplines. For instance, the chief engineer is responsible for design and development. Nevertheless, any cross-functional relationships that do exist are regarded as secondary to the main line structure. They are not deﬁned, no special provision is made for them and they are not brought under any form of control.

A project comes to life when the customer gives a purchase order or when the contract document is signed, many others stags will be passed through before this project will come alive. As instructions are issued within departments and from one department to another, information must be fed back along the communication channels to signal the results obtained as each instruction is carried out. The feedback data are used to correct design errors discovered in the design drawing for the essential task of controlling the progress of the project. Much project information would not ﬂow along the deﬁned lines of authority, but will cross them in complex and changing patterns. In fact, when a manufacturing project is compared with routine production, the emphasis has shifted from looking principally at the line relationships to consideration of the functional connections. This will have to be reﬂected in the formal organization structure if the project is to be coordinated and managed satisfactorily.

Project matrix organisation allows the general activities of the company and its department to continue normally while the project goes on, as the project manager gives undivided attention to the project. The project manager acts as a coordinator and has no direct authority over any manager or their staff. This could be referred to as functional/coordination matrix. It more difficult when accompany handles several project at the same time. There various strength of organisational matrix, the weak, the balanced and the strong forms of matrix. In a weak matrix, each manager has no power hence; he/she is entirely dependent on the organisational managers for staff and equipment. In the balanced matrix, Project and functional managers are expected to collaborate constructively and allocate personnel and other resources to tasks according to genuine priorities to ensure the successful outcome of all projects, this is the most common matrix. In the strong matrix, the authority of each project manager takes precedence over the authority of the functional managers, at least as far as the allocation and progressing of work is concerned. In a ‘secondment matrix’, which is the strongest form of the matrix, the functional managers must nominate and assign members of their departments to work full-time for the project managers. The people assigned report principally to their respective project managers for as long as each project manager needs them.

In a project team organisation, A complete team can be created for each project as a self-contained unit with the project manager placed at its head. The project manager is given direct line authority over the team and is responsible not only for planning, progress and work allocation but also for all technical aspects of the project. Communications across the various technical and professional disciplines are easier when the project manager is in total command. All members of the team identify with the project and can be strongly motivated towards achieving the project goals. A task force is a form of pure project team, as it name implies it is a particular urgency and common sense of purpose. However, a task force can be used in any kind of project, whether it is to deal with a natural disaster or a particularly urgent industrial project. In a construction site organisation, it is usually more sensible to place all site staff under the direct command of the most senior manager located at the site, rather than depend on multiple lines of command back to the home ofﬁce. Functions such as accounting, marketing, human resources, facilities management and general administration, although they might provide essential support to projects, are not usually involved directly in performing scheduled project tasks.

If as a project a manager you are asked to provide the best type of project organisation. There are lot things to put into consideration. You have the case of a good and dedicated team you consider the short term leadership and motivation, good-cross functional communication then security and confidentiality. To weigh your losses there will be a case against the team, inflexibility and inefficacy in use of resources, isolation of specialists, the administrative difficulties and life after the project. There will also be a case for and against the matrix. The comparism of teams and matrix and the hybrid option( adopting both project team and the matrix organisation).

In any project organization that is complicated by the number of different participating companies, it makes sense to nominate one individual in each sub organization (including the customer) as the principal local information and communications coordinator. Each sub organization within the overall project organization is likely to have its own project manager and they will often be able to nominate and supervise an appropriate information coordinator. These coordinators can ensure that all signiﬁcant incoming documents and other communications are directed to the responsible recipients for action, followed up where necessary, and recorded for safekeeping and subsequent retrieval.

The project organisational structure gives are better understanding of how to run a project with an organisation. Where each person knows what has been allocated to him/her.